Little Fish in Big Ponds: Fisheries & Community Development in Alaska and Greenland

Michael Fox Johnson
Saint Edmund's College
Scott Polar Research Institute
University of Cambridge

DECLARATION

In accordance with the University of Cambridge regulations, I do hereby declare that:

- This thesis consists of my own original work and conforms to an accepted standard of citation in those instances in which I have availed myself of the work of others.
- This thesis is not now being submitted, nor has been submitted in the past, for any other degree, diploma, or similar qualification at any university or similar institution.
- This thesis does not exceed the maximum allowable length of 20,000 words, excluding tables, appendices, and references.

Michael Fox Johnson
12 June 1997

ABSTRACT

Development of remote regions in the circumpolar north has been the subject of much academic, political, and community discourse. This thesis examines the effects that two different fisheries management regimes, the Western Alaska CDQ program and Greenland's Inshore Shrimp Fishery, have on community development. It briefly describes the natural environments, the resident peoples and their histories, and present socio-economic conditions of the regions that participate in the two programs. It then reviews relevant development literature, and, based on that review, selects criteria for evaluation and comparison. This thesis analyzes the two regimes, and supporting programs, on issues of control, adequacy of resource base, amount and availability of capital, employment created, social organization of work production, reliance on existing skills and fostering of new ones, and long-term political viability. It concludes that market-based resource regimes hold dangers for indigenous residents of remote regions. However, establishing community rights to resources, rather than individual ownership, appears to mitigate some of the dangers. Moreover, as seen in the CDQ program, community-rights frameworks can exist within larger individual-oriented, market-based regimes.

ACKNOWLEDGMENTS

James Carville rightly noted that it's best not to select a few people for extra praise and thanks; you can create more enemies by the sin of omission than friends by struggling to remember all who have helped. That piece of advice notwithstanding (he couldn't seem to follow it either), I feel compelled to thank several people and institutions, without whose assistance this thesis would never have been completed:

- First and foremost, duty requires me to thank the Brian B. Roberts Fund of the Scott Polar Research Institute and the kind folks at St. Edmund's College for providing financial assistance towards a research trip to Copenhagen.

- Graham Poole for his enthusiasm and help with ideas, sources, and contacts.

- Dan Carlsson, Greenland Institute of Natural Resources, Copenhagen, for his thoughtful assistance and gracious hospitality, even when beset by the flu.

- Peter Friis and Rasmus Ole Rasmussen, Roskilde University, for a tag-team question-and-answer session that lasted one full day.

- My advisor, Simon Ommanney, for his painstaking editor's eye and generous soul.

- The faculty, staff, and students of the Scott Polar Research Institute, and especially Captain Joe Wubbold, for ensuring that things moved along in a smart and seaman-like fashion.

Many people improved the quality of this thesis. Sadly, the remaining imperfections are the work of the author.

CONTENTS

TABLES

FIGURES

Chapter 1: Introduction

This thesis examines the effects that fisheries management regimes have on community-level economic development in rural areas of Alaska and Greenland. It compares two distinct models of development policy and assesses how effectively each model enables indigenous residents of these remote regions to accomplish desired forms of social and economic change.

1.1 CHALLENGES OF NORTHERN DEVELOPMENT

The challenges of development in northern hinterlands are great. Armstrong et al. (1979: 1) define the circumpolar north as "a convenient abbreviation for the Arctic and sub-Arctic." The climate of the circumpolar north is demanding, the environment "fragile," and the distance to large markets in the temperate zones vast (Hoel 1993: 15-16). Further, these factors combine to ensure that conventional development requires extraordinarily high levels of capital (*Ibid.*), often in short supply in northern regions. It, therefore, comes as no surprise that development rarely occurs, succeeding only when the supply of a resource is large enough, or world prices high enough, to support it (Flanders 1992).

Moreover, when development does occur, it seldom benefits long-term residents of the region and rural, indigenous residents in particular. While indigenous interests concerning the circumpolar north's resources are more "intense" than those of other residents (Young 1996), they are poorly situated to take advantage of conventional economic activity based on those resources. This is because they generally lack formal education and job skills, capital, title to or control over the resources themselves, and access to and influence with governmental organizations. Complicating matters further, indigenous social and cultural values often conflict with

conventional models of proper work behavior and goals. For example, full-time work can interfere with traditional subsistence activities.

As a result, the machinery and camps associated with northern development projects stand in stark contrast to most rural, indigenous villages and settlements. High-tech oil rigs and gas-handling facilities, multi-million dollar catcher-processor boats, and mines that extract ore from deep within permafrost seem to share more with NASA's space vehicles than with the world of substandard housing, fish-drying racks, and yards full of broken ski-doos and outboard motors. In the past, the two traditional schools of thought concerning development only reinforced the disparity; in one, Natives should forget their "quaint, antiquated ways" and join the "modern world," or, in the other, as representatives of "our noble savage past," they should be sheltered from the evil influences of capitalism and other modern ills.

1.2 THE VILLAGE ECONOMY

While both schools still have their adherents, many now recognize that the "village economy" incorporates elements of, yet is distinct from, either the traditional or the "industrial" model (Ross and Usher 1986: 142). Put another way, the village economy incorporates and values a higher level of "informal" economic activity than that found in industrial, or wage, economies. At the same time, it still includes "formal," or wage, elements (*Ibid.*). Therefore, if any development is going to succeed in meeting the needs of the rural, indigenous residents of the circumpolar north, it must accommodate elements of both traditional and wage economies. This caution is an important one because indigenous groups, like any community or population, "are not passive recipients of development." (Young, 1995: 39). They

have collectively, and as individuals, their own visions of the future of their communities.

The persistence of the informal and traditional part of the village economy probably results from both cultural and practical circumstances, for lack of better terminology. In the first place, Native peoples value aspects of the informal economy as activities that sustain their sense of community and cultural identity. Subsistence hunting and gathering, sharing of catch, manufacture of traditional goods all bind the community together and to their shared history. In the second, traditional activities also provide goods that they either could not afford in the marketplace or are simply not available to them (Bosworth 1995).

However, since the introduction of the fur trade, Natives have produced goods for exchange with the "industrial" economy (Ross and Usher 1986: 144). Always incorporating whatever technology suited their needs, indigenous northerners have long made use of items provided by the industrial economy. They take wage-earning jobs or sell products of the tundra, taiga, and sea to obtain rifles, outboard motors, snow machines, all-terrain vehicles, and the like. Tensions arise, however, because the two interconnected economies often compete with each other for land, labor, and capital. Further, because of the nature of the links between them, the growth of the industrial economy adversely affects the informal economy, and thus, the village economy (*Ibid.*). Caught by these powerful and conflicting currents, the challenge facing the indigenous people of the circumpolar north is great, though not the one often depicted by the popular media. Instead of a clear cut choice between an acculturated, urban, industrial future and an idealized, romantic past,

they must instead attempt to find a proper balance between the formal and informal activities that compose a village economy and sustain their way of life (*Ibid.*).

1.3 THE ROLE OF GOVERNMENT

As noted above, indigenous peoples generally lack the resources and skills to set their own agenda and make a future that includes a healthy village economy. Private operators rarely have the incentive to focus on this goal. Therefore, government programs provide most of the developmental assistance (Young 1995). These efforts do not exist in a vacuum, though. Governments labor under many different, and sometimes conflicting, duties and obligations. Urban residents, whether close by or thousands of miles away, whether sharing the same cultural history or not, do not always understand or support costly projects directed towards small, remote, and seemingly unproductive minorities. Even if they do, public funds are limited, and other needs demand attention and resources.

While the future of so many people rests on government efforts, governments, in turn, have few resources with which to address the problem. This thesis examines the attempts of two different governments to foster development by allocating similar types of natural resources among similar groups of rural, coastal, indigenous residents of the circumpolar north. While terms such as "sustainable development," "community" or "appropriate development," "informal economy," and "next economy" have become part of the vernacular in the last decade and have received attention in academic circles, policy makers have few concrete lessons, besides past failures, from which to proceed. Successful models are few. This thesis will provide policy makers and academics with a comparison of

two dramatically different approaches to development, and, thereby, provide a common basis for discussion and decision-making.

1.4 CASES FOR STUDY

The areas selected for scrutiny, Western Alaskan villages on the Bering Sea and Greenlandic settlements along its ice-free coastline, share many elements of a common history, besides a past rooted in hunter-gatherer traditions. Briefly, the indigenous or aboriginal peoples of these areas endured colonization by Europeans and North Americans, interested in resources for exploitation, and by missionaries intent on their religious conversion. Hitherto unknown diseases decimated their populations. Government policies changed from neglect, benign or otherwise, to assimilation. More recently, they have gained some measure of self-determination. In Alaska, Natives reached accord with the federal government in 1971, receiving outright title to some lands and resources and regional and village corporations charged with the dual purpose of making a profit and providing for the welfare of Native shareholders. In Greenland, residents attained home rule in 1979 and now oversee their domestic affairs. Given these circumstances, several authors have noted "the similar socio-cultural situation" in Alaska and Greenland and commented on similar social phenomena and trends (Hamilton et al. 1996: 89; Stenbaek 1987).

In both areas, government is the largest employer, and the fishing industry, a distant second, is the largest private-sector employer. In the Bering Sea, trawlers, largely owned by corporations based out of the state, harvest enough pollock to make it the largest fishery in the world (Townsend 1996). Similarly, Greenlandic waters account for one third of global catches of the northern shrimp (Poole 1996). In both cases, though, the benefits of these enterprises rarely reach the rural,

indigenous people living on the coasts. Neither fishery focuses on a species harvested traditionally, and both require capital outlays beyond the means of the local residents. It is this dichotomy between high-tech and capital-intensive fisheries and isolated, cash-poor, indigenous communities to which the title of this thesis, "Little Fish in Big Ponds," refers.

In addressing the challenges to development for these people, however, the respective governments have adopted radically different approaches, particularly in this decade, but during earlier years as well. This is not surprising in that the governments operate within different traditions of political and economic thought. The Greenland Home Rule Authority (GHRA) has, at least for now, largely adopted the social democratic ways of the Danish Kingdom, and the State of Alaska, while exceptional in many ways, mostly operates in ways familiar to the democratic and capitalist notions of the rest of the United States. This thesis critically examines the outcomes of the two very different systems intended to provide for the residents of these similar areas. Specifically, it focuses on the Western Alaska Community Development Quota (CDQ) program and Greenland's inshore shrimp fishery (GISF) and the government support for participants in that fishery. While different in origin and method, both fulfill the same role, providing a primary source of community development based on a fishery resource.

1.5 AIMS OF THESIS

Based on a review of pertinent remote-regions and community-development literature, this thesis evaluates the effects of these resource regimes, and relevant supporting programs, on several levels.

- It discusses the locus of control for each regime;
- it examines the size of the resource base and amount of capital in each system and assesses the way in which both are made available to communities;
- it documents the number and type of employment opportunities provided by each regime and discusses expected trends;
- it analyzes the social organization of work production in both programs;
- it outlines the training and educational opportunities provided by each system; and
- it discusses the political viability of each program and related issues of social equity.

Given the amount of material and data available on each program, this thesis cannot be an exhaustive examination of the subject. It can only begin the process.

The vulnerability of resource-based economies in northern remote regions to outside market prices, and possible solutions, lies outside the scope of this thesis. For an investigation of that issue, see Pretes (1993), Pretes and Robinson (1989), Knowler (1989), or Sugden (1982). The fisheries management literature abounds with critiques of management methods and how effectively they conserve fish stocks (cf. Copes 1986; Townsend and Wilson 1987). For the purposes of this thesis, it is assumed that the governments of the United States and Greenland manage fishery stocks equally and adequately. Thus, this thesis concentrates on the social and economic effects of the fisheries management regimes, rather than their respective abilities to achieve conservation goals.

1.6 DEFINITIONS

Because of their central importance to the issue at hand, several terms require immediate definition. Otherwise, terms are defined on an as needed basis. In the first place, the areas under scrutiny are considered "remote regions" in the sense outlined by Huskey and Morehouse (1992: 129):

> Remote regions are "distant from large, urban, industrial and political centers, and they are sparsely settled. Most of them contain Native or indigenous populations as well as non-Native immigrants, and they have a mix of traditional and Western institutions. Typically they have limited market opportunities, and they are dependent on natural resource exports, government transfers, and subsistence activities. The costs of doing public and private business are high. Important decisions affecting these areas are made in distant metropolitan centers. ***These regions lack both political autonomy and economic self-sufficiency*** [emphasis added]."

Importantly, the boundaries of remote regions are not solid lines. Instead, they are "permeable" and shift according to perspective (*Ibid.*), though the areas considered here will be bound by legal and political definitions. Remote regions are also "rural," and that term is used to describe residents of those regions.

"Development" is "the process of overcoming obstacles to desired forms of change" by the inhabitants of an area, both indigenous and immigrants (*Ibid.*). "Community development" serves to emphasize the importance of the character of development desired by many indigenous residents of remote regions. The goal of community development is not simply job creation at any cost. "Rationalize" means to improve efficiency, and efficiency "is gained by reducing capital and labor expenditures." (McCay et al. 1995: 105) "Regime" denotes the set of institutions that control the management of a resource (Young, 1982).

The United Nations International Labor Organization's Convention 169 (in Marantz 1996: 145) defines indigenous peoples as:

> "peoples in independent countries who are regarded as indigenous on account of their descent from the populations which inhabited the country...at the time of conquest or colonisation or the establishment of present state boundaries and who, irrespective of their legal status, retain some or all of their own social, economic, cultural, and political institutions,"

and it is used in that manner here. The word "Native" is herein used interchangeably with indigenous. It is capitalized to be consistent with its use in Alaska to denote a member of any of the many indigenous groups from the state (Tabbert 1991: 53), though applied similarly to indigenous Greenlanders. A number of non-indigenous people participate in both the CDQ program and the inshore fishery, though neither constitute a large percentage (Ginter 1995; Poole pers. comm.).

1.7 OVERVIEW

The structure of the thesis is straightforward. Chapter Two briefly describes the physical environment of the Bering Sea coast and adjacent waters, the resident people and their history, and the socio-economic conditions in the villages included in the Alaskan CDQ program. It also sets the stage by describing the Bering Sea pollock fishery and by giving a rough outline of how the CDQ program functions. Chapter Three mirrors Chapter Two, only it focuses on Greenland, Greenlandic waters, and the Greenlanders from towns and settlements that participate in the inshore shrimp fishery. It also describes the offshore shrimp fishery and outlines the management regime of the inshore shrimp fishery. Chapter Four reviews community-development literature relating to indigenous peoples living in remote regions of the Arctic. It then identifies commons themes and

elements necessary for successful development found in the literature. Chapter Five takes those themes and tackles the specific details available on the programs. Finally, Chapter Six synthesizes and translates the results of the analysis in Chapter Five into concrete conclusions.

Chapter 2:
Western Alaska & the CDQ Program

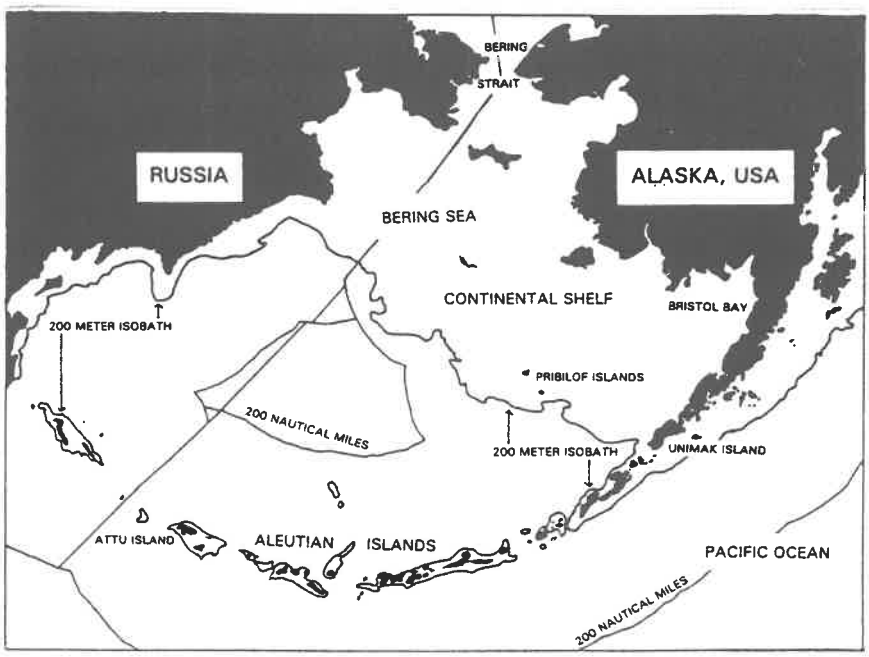


Figure 2.1: Map of the Bering Sea

(adapted from Ginter 1995: 149)

Alaska is one of the youngest of the fifty states of the United States and is its largest, roughly equal to one-fifth the size of the rest of the country. Purchased from Russia in 1867, it was administered as a federal territory for almost one hundred years. It became a state in 1959. In essence, the state government manages anadromous and inland fisheries, such as salmon and herring, while the federal government controls fisheries that take place mainly in the 200 mile exclusive economic zone (EEZ). The federal government is also responsible for dealing with Alaskan Natives, because the relationship, legally speaking, was originally at the level of sovereign nations. The CDQ program is jointly administered by the federal and state governments. Basically, federal authorities retain control over the fisheries aspect of the program, whilst the state deals with developmental concerns. CDQ regulations, and the subsequent laws, limit the program to communities lying no more than fifty nautical miles from the Bering Sea and not on the coast of the Gulf of Alaska. This neatly defines the area of study.

2.1 THE NATURAL ENVIRONMENT, CLIMATE, AND RESOURCES

2.1.1 BERING SEA COAST

The Bering Sea coast consists of a wide variety of geographical forms and features. The more than fifty Aleutian Islands are a chain of low, volcanic mountains, with steeps slopes jutting from the sea. The Aleutian Chain, as the islands are commonly known, extends for some 1,100 miles (National Research Council 1996: 32). Many of the volcanoes are still active, and the Aleutian Chain and Southwest Alaska in general comprise one of the most seismically active areas of the world. Proceeding to the north, much of the coast of Bristol Bay and the Yukon-Kuskokwim Delta (Y-K Delta) area are characterized by low-lying tidal flats, with lakes, ponds, and tundra.

Much of the ground that is not solid rock contains permafrost, or quasi-permanently frozen ground.

Because of the dominating influence of the ocean, temperatures in the Aleutians rarely dip below 0°C in the winter or rise above 16°C in summer. As one follows the coastline northward, though, average winter temperatures drop dramatically, generally ranging between -18°C and -35°C. Throughout the entire area, trees are absent or rare, and low, ground-hugging shrubs, grasses, sedges, mosses, and lichens dominate the landscape. However, the specific plant communities vary by region; long grasses predominate in much of the Aleutians, and tundra covers the Yukon-Kuskokwim Delta. Vast numbers of waterfowl migrate to breed and nest on the tundra, and countless seabirds nest in rookeries along the coast. Caribou and other land mammals populate the Alaska Peninsula and other areas in significant numbers, and moose inhabit the inland areas of the Y-K Delta.

The Bering Sea coast is generally lacking in commercially significant non-renewable, or mineral, resources, with a few exceptions. Most notably, the beaches of Nome on the Seward Peninsula contained one of the largest gold deposits in North America. While the boom lasted only from 1899 to 1912 (Cole 1991), some small-scale miners still scour the sand and gravel found there. Other gold mining ghost towns dot the Seward Peninsula, and the village of Platinum in Bristol Bay hosted a small, short-lived mining operation for its namesake earlier in this century. During the late 1970s and early 1980s, the federal government began the process of leasing offshore areas in Bristol Bay for oil and gas exploration. These efforts were abandoned due to pressure from commercial fishing and Native interests. Finally, residents of Unalaska-Dutch Harbor are currently investigating the

geothermal potential of Makushin volcano to provide power to their city's needs (Blazer,R. pers. comm.).

2.1.2 BERING SEA

Framed on the north by the Seward and Chukchi Peninsulas, mainland Siberia and the Kamchatka Peninsula on the west and southwest, the 1,900 km long ridge and island chain that makes up the Aleutians to the south, and mainland Alaska to the east, the Bering Sea covers almost 3 million km^2. Geographically, it stretches from 162° east to 157° west longitude and lies between 52° and 66° north latitude (National Research Council 1996). The Bering Sea can be divided into three main areas: the continental shelf, the Aleutian Basin, and the Aleutian Islands. The extensive continental shelf underlies approximately 40% of the whole Bering Sea, shown in Figure 2.1 (Ginter 1995).

Sea-water exchange occurs in three main areas. Water flows outward through the Bering Strait into the Chukchi Sea. In the western Bering Sea, the Kamchatka current runs outward and south into the Oyashio mixing region. Saltwater flows into the Bering Sea from the Pacific through gaps in the Aleutian Islands, creating a large, nutrient rich mixing zone (National Research Council 1996). The Yukon and Kuskokwim rivers drain thousands of square miles of Alaska and Canada, providing substantial freshwater and nutrient input. Annual winter ice cover and the maximum ice edge extent vary considerably. In 1974-76, the edge was at 56°-56.5°N, and in 1978-79 it extended to 58°-58.75°N (*Ibid.*). This is roughly as far south as the Pribilof Islands and Bristol Bay and somewhat further south along the coast.

The Bering Sea supports at least 450 species of fish, crustaceans, and mollusks; 50 species of sea birds; and 25 species of marine mammals. The indigenous peoples of the region have utilized the fish, bird, and marine mammals since the last ice age, and Japanese, Russian, and American commercial interests, among others, have harvested animals from the Bering Sea since the 17th century. These historical harvests consisted mainly of sea otter furs, seals and sea lions for fur and oil, and whales for baleen and oil. The first salmon cannery in the region was built near the Moravian Mission in Bristol Bay in 1884 (Kresge et al. 1974), and the first commercial bottomfish fisheries, targeting cod, began about the same time (National Research Council 1996). Today, approximately 25 species of fish, crustaceans, and mollusks occur in commercially significant numbers (*Ibid.*).

2.2 PEOPLE

2.2.1 PRE-HISTORY

At the time of historical contact with Europeans and Americans, a diverse group of people inhabited the Bering Sea region. In all, five distinct cultural groups, the Siberian Yupik of St. Lawrence Island and part of the Seward Peninsula, the Inupiat (part of the widely distributed Inuit people) of the Seward Peninsula and slightly south along the coast to near the mouth of the Yukon river, the Central Yupik of the Y-K Delta area and Bristol Bay, the Alutiiq (or Koniag Eskimo) on the Alaskan Peninsula, and the Aleuts of the Aleutian Islands, called this area home. All spoke mutually unintelligible languages, held varying spiritual beliefs, and sustained themselves with differing patterns of social customs and natural-resource harvesting.

Despite these differences, some common cultural threads may be noted. Among all these peoples, daily life required an intense relationship with the natural world around them. They hunted land and sea mammals, fished, and collected birds eggs and berries, according to their availability by region. Their spiritual or religious belief systems incorporated these plants and animals, most of which possessed a spirit or soul. Known as animism, these systems of belief required observance of taboos, respect, and reciprocity between the Native peoples, and the natural entities. Generally, shamans specialized in mediating between people and natural entities, curing the sick, and ensuring the abundance of wild animals on which all depended.

2.2.2 HISTORY

Vitus Bering, a Danish explorer in the service of the Russian Czar, and his men encountered Aleuts in the Shumagin Islands, south of the Alaska Peninsula, in 1741. This marked the first direct contact between Europeans and Alaskan Natives. Elsewhere, contact with Europeans and Americans varied by time and type according to the resources of the region and by pure chance, shown in Table 2.1.

Table 2.1
Time of Contact for Alaska Native Groups

Aleut	1750-1780
Central Yupik	1780-1840
Siberian Yupik	1850-1870
Inupiat	1850-1870

(adapted from Langdon 1987: 4)

The Russians soon returned in large numbers seeking furs, mainly sea otter pelts, and claimed all of what is now Alaska. While much of their interest focused on Kodiak Island, Prince William Sound, and southeast Alaska, they also established missions and fur-trapping posts on rivers

throughout Bristol Bay and the Yukon-Kuskokwim Delta. By the mid-nineteenth century, they had virtually exterminated the sea otters, foreign whalers had begun to seek their prey along the northwest coast of Alaska, and wars in Europe and Asia diverted the Russians' attentions. Accordingly, they sold Alaska to the United States in 1867.

For almost three quarters of a century, little changed in the lives of the Alaskan Natives. However, as mentioned earlier, the Nome gold rush of 1899, brought ten to fifteen thousand fortune-seekers to the Seward Peninsula in two to three years. When the gold largely disappeared, most of them did as well. The rest of the region had only sporadic contact with outsiders, limited to whaling crews to the North, merchant companies buying pelts, the beginnings of commercial fisheries in Bristol Bay and the Aleutians, and the occasional missionary.

World War II marked a turning point in Alaskan history and the lives of Alaskan Natives. With the Japanese occupying Kiska and Attu Islands in the Aleutians, the United States government and military responded. Almost all Aleuts were forcibly removed from their island homes, kept in miserable accommodations in Southeast Alaska, and largely ignored for the remainder of the war. Elsewhere, the military created listening posts and staging areas with airports. They also organized local Native scouts and militias. The cold war saw the establishment of Distant Early Warning and White Alice stations along the coastline.

On January 3, 1959, Alaska became the forty-ninth state of United States of America. Significantly, one of the major arguments for statehood was to establish more control over fisheries. The limited

tax base of the new state, combined with the strongly individualistic sentiments of Alaskans, brought few changes to rural Alaska. However, in 1968, the discovery of a massive oil field underlying Prudhoe Bay on the North Slope quickly set events in motion. First, to establish clear title to the oil-rich lands and establish a pipeline corridor to transport the oil, the federal government needed to resolve issues surrounding Native Alaskans' claims to aboriginal title to the state. In three years, oil companies, environmental groups, Natives, and state and federal officials rapidly negotiated a settlement, and Congress passed the Alaskan Native Claims Settlement Act (ANCSA) in December of 1971.

In return for surrender of aboriginal title, ANCSA created twelve, for-profit regional corporations charged with the welfare of their Native shareholders. The act endowed them with nearly $1 billion dollars and lands, equaling roughly 14% of the state, including some sub-surface rights, making Native corporations the largest private land owners in Alaska. It also created numerous village corporations to function at the local level. Importantly, the regional corporations held title to lands which could now be sold or lost through bankruptcy. Concern over this and other provisions, led to a series of changes to ANCSA in 1987. Amendments made at that time allow corporations to deed lands to land trusts to hold them in perpetuity (McNabb 1992).

2.2.3 PRESENT SOCIAL CONDITIONS

According to the 1990 census figures, Western Alaska is one of the most underdeveloped areas of Alaska and the United States as a whole. The fifty-six communities that lie within the CDQ region and participate in the program contained a total population of 21,037, with an average community size of 390. More than 25% live below the

poverty level. Much of the available housing is substandard, and customary utilities such water and phones are scarce. Five gallon plastic buckets or outhouses remain the primary means of sewage disposal in over half of the communities.

78% of Western Alaska residents identify themselves as Native Americans, and for most older residents, English is a second language or not spoken at all. Residents under the age of sixteen constitute a large proportion of the total population, reaching 40% in some areas. The civilian labor force, limited largely by those choosing not to participate in the wage economy, makes up only 59% of the population aged 16 to 65. Within that labor force, unemployment ranges by area from 9% to 31%. Federal, state, and local government in the form of schools, health-care centers, airports, law-enforcement departments, and military bases employ almost 50% of all workers.

Only a few roads link communities; none connect with the rest of Alaska. Most communities are totally isolated. Boats in summer, snowmachines in winter, and planes provide the only transportation. The necessary reliance on air transportation dramatically increases the cost of durable and consumer goods. As noted above, employment opportunities are few, and direct government transfer programs, such as the Alaska Permanent Fund Dividend (PFD), the Alaska Longevity Bonus, and the federal Aid to Families with Dependent Children (AFDC), commonly known as welfare, provide much of the cash income. A 1994 study found that the PFD, an amount close to $1,000 per resident in recent years, constituted 25% of the income of the poorest 10% of Alaskans, largely those residing in rural areas such as Western Alaska (Goldsmith 1994). As one might expect from these statistics, Western Alaskan communities

experience many of the social ills associated with poverty, isolation, and cultural change. Suicide rates, particularly among young males, and teenage pregnancies are high. Abuse of alcohol and other substances is common, and a sense of despair pervades many communities.

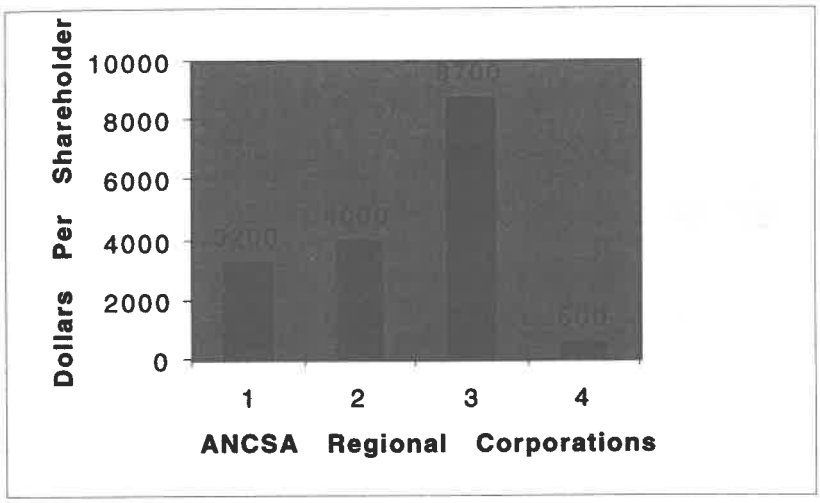
2.2.4 PRESENT ECONOMIC CONDITIONS

While technology has changed over time, and cash is often required for subsistence pursuits, hunting, fishing, and gathering provide a large portion of food for residents of the CDQ region. Defined in state regulations as "the customary and traditional use of naturally occurring wild resources for food, clothing, art, crafts, sharing, and customary trade," subsistence activities also rank highly as a preferred occupation, often above wage labor (Bosworth 1995: 155). The average resident consumes 437 pounds of subsistence foods, primarily fish, annually (State of Alaska: 1995). While Natives often stress the cultural importance of subsistence activities and sharing of traditional foods, the replacement costs, figured at $6 to $11 per kilogram, would be staggering for most households (Calloway 1995: 157).

Over twenty-five years, the ANCSA regional corporations have grown and experienced mixed success. Unfortunately, the four regional corporations that comprise the CDQ region are four of the five poorest financial performers (Colt 1991). Though several manage minor annual dividends, based on stock and bond holdings, for shareholders, business venture successes are few and shareholder employment minimal. Calista Corporation, which has more shareholders than any other ANCSA regional corporation, had the lowest total equity of any corporation, $6 million, in 1990 (*Ibid.*). Figure

2.2 displays the book equity per shareholder of each ANCSA regional corporation in the CDQ region. Listed in alphabetical order, they are: 1) Aleut Corp., 2.) Bering Straits Native Corp. 3.) Bristol Bay Native Corp. and 4.) Calista Corp. The bars show dollars per shareholder.

Figure 2.2:
Book Equity per Shareholder of ANCSA Regional Corporations of the CDQ Region in 1990

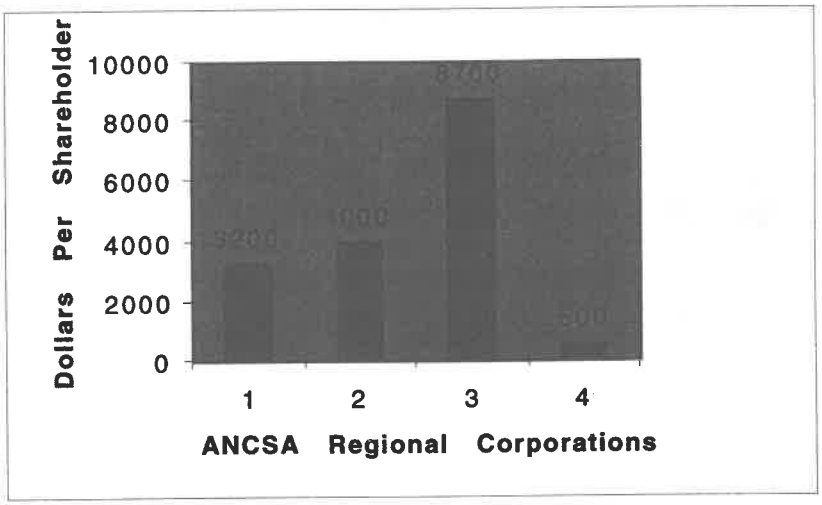


(adapted from Colt 1991: 4)

The greatest amount of private employment anywhere in the region results from the Bristol Bay salmon fishery, centered primarily on Dillingham, and local herring (roe) fisheries (Kresge et al. 1974). However, local communities often do not receive the lion's share of the economic returns. Due to the capital requirements and the limited-entry permit system, few locals participate in the more profitable fisheries and are often relegated to smaller, less-profitable ones. Studies have documented the trend of limited-entry permits transferring from rural Alaska to urban areas (Langdon 1987). Further, because the permits are limited in number, these fisheries fail to provide new fishing jobs for the rapidly growing population. The salmon canneries and processing plants also provide some

2.2 displays the book equity per shareholder of each ANCSA regional corporation in the CDQ region. Listed in alphabetical order, they are: 1) Aleut Corp., 2.) Bering Straits Native Corp. 3.) Bristol Bay Native Corp. and 4.) Calista Corp. The bars show dollars per shareholder.

Figure 2.2:
Book Equity per Shareholder of ANCSA Regional Corporations of the CDQ Region in 1990



(adapted from Colt 1991: 4)

The greatest amount of private employment anywhere in the region results from the Bristol Bay salmon fishery, centered primarily on Dillingham, and local herring (roe) fisheries (Kresge et al. 1974). However, local communities often do not receive the lion's share of the economic returns. Due to the capital requirements and the limited-entry permit system, few locals participate in the more profitable fisheries and are often relegated to smaller, less-profitable ones. Studies have documented the trend of limited-entry permits transferring from rural Alaska to urban areas (Langdon 1987). Further, because the permits are limited in number, these fisheries fail to provide new fishing jobs for the rapidly growing population. The salmon canneries and processing plants also provide some

employment, but wages are low, the work season is short, and nonresidents take many of these jobs as well.

2.3 THE BERING SEA POLLOCK FISHERY

In contrast to the isolated, rural poverty of the CDQ communities, ultra-modern catch-processor boats roam the Bering Sea, taking part in the largest fishery by tonnage in the world, the walleye pollock (*Theragra chalcogramma*) fishery. Passage of the Magnusson Fishery Conservation and Management Act in 1976 established a 200 mile wide area, now called an exclusive economic zone (EEZ), adjacent to US territorial waters. Among its many provisions, the act created eight regional councils to manage fishery policy within their confines. The North Pacific Fisheries Management Council (NPFMC) implemented its first plan in 1981 which set an optimum annual yield for bottomfish fisheries. Within that optimal range, the council decides upon an annual total allowable catch (TAC). From 1981 to 1987, the NPFMC permitted foreign vessels to catch that portion of the TAC not entirely harvested by the domestic fleet. With the domestic fleet continually expanding, they discontinued that practice, and the US-foreign joint fishery for pollock ended in 1990.

Today, the pollock fishery annually totals nearly 2.9 billion pounds, or 1.3 million metric tons, with a landed value exceeding $200 million. The large-volume, low-value harvest reaches, mostly foreign, consumers as frozen fillets, roe, and surimi. The fishery is managed on an open-access basis and divided into two seasons. The "A" roe season runs from January 1 to April 15 and comprises 45% of the non-CDQ quota while the "B" non-roe season stretches from August 15 to December 31. Over-capitalization has ensured that the TAC is met in

a far shorter period of time than the allotted season. A moratorium on new vessel entry was established in 1995.

By 1989 and 1990, over-capacity, disputes between inshore processors and the ocean-going catcher-processors, gear conflicts, bycatch problems, and marketing troubles led to a reassessment of the fishery. In response, the NPFMC instituted the above-mentioned seasonal allocations, roe-stripping limitations, and a host of other measures including an allocation between competing inshore and offshore processing interests. As a part of that allocation compromise, advocates for Western Alaska, including state officials, were able to gain support for the Western Alaska Community Development Quota Program (CDQ), approved in principal by the Secretary of the Department of Commerce in March 1992. The program has been added to since by the council and became enshrined in law in the summer of 1996.

2.4 THE CDQ PROGRAM

State and federal officials jointly administer the CDQ program. The federal government, in the form of the National Marine Fisheries Service and the North Pacific Fisheries Management Council, oversees fisheries issues, and the State of Alaska largely controls the economic-development portion of the program. Essentially, the state grants the resource to local development agencies, guides their efforts, and monitors their progress, all subject to final approval by the federal Secretary of the Department of Commerce.

Table 2.2 lists the four basic criteria outlined by the State of Alaska for a community to qualify for the program. Provision 4 initially excluded Dutch Harbor and Akutan from participation, though citizens of Akutan gained access to the program in September 1995.

Table 2.2: CDQ Community Qualification Criteria

1	Location within 50 nautical miles of the Bering Sea.
2	'Native' village status as defined by ANCSA.
3	Residents who conduct over 50% of their current subsistence and commercial fishing effort in the waters of the Bering Sea.
4	No previously developed harvesting or processing capacity sufficient to support substantial groundfish fisheries participation.

(adapted from State of Alaska 1995: 11)

The first application procedure required likely communities to join together to form corporations.

Table 2.3: CDQ Communities by Corporation

APICDA	Atka, False Pass, Nelson Lagoon, Nikolski, St. George.
BBEDC	Aleknagik, Clark's Point, Dillingham, Egegik, Ekuk, Manokotak, Naknek, King Salmon/Savonski, Pilot Point/Ugashik, Port Heidon, South Naknek, Togiak, and Twin Hills.
CBSFA	St. Paul.
CVFC	Cherfornak, Chevak, Eek, Goodnews Bay, Hooper Bay, Kipnuk, Konigianak, Kwigillingok, Mekoryuk, Newtok, Nightmute, Platinum, Quinhagak, Scammon Bay, Tooksok Bay, Tuntutuliak, and Tununak.
NSEDC	Brevig Mission, Diomede/Inalik, Elim, Gambell, Golovin, Koyuk, Nome, Savoonga, Shaktoolik, St. Michael, Stebbins, Teller, Unalakleet, Wales, and White Mountain.
YDFDA	Alakanuk, Emmonak, Kotlik, and Sheldon Point.

(adapted from State of Alaska 1995: 11)

In all, 56 communities have banded variously to create six corporations, shown in Table 2.3 with shareholder communities: Aleutian Pribilof Island Community Development Association (APICDA) for five communities; Bristol Bay Economic Development Corporation (BBEDC) for 13 communities; Central Bering Sea Fishermen's Association (CBSFA) for 1 community; Coastal Villages

Fishing Cooperative (CVFC) for 17 communities; Norton Sound Economic Development Corporation (NSEDC) for 15 communities; and Yukon Delta Fisheries Development Association (YDFDA) composed of 4 communities. These corporations received a total of 7.5% of the TAC for pollock in the Bering Sea/Aleutian Islands district. With their share of this quota in hand, the corporations sought business partners to harvest their quota, bringing substantial revenue and employment to their communities.

Five of the six organized as non-profit corporations, but some have for-profit subsidiaries. The sixth, Coastal Villages, is a for-profit corporation. Each corporation has contracted with established seafood companies to harvest and process their allocation. The five nonprofit corporations annually lease their quota in exchange for a combination of fixed, or base, price, percentage of net profit, and guarantee of employment for shareholders. Coastal Villages offered their allocation as their half of a joint venture and became co-owners of a catcher-processor. Because the CDQ can be fished at any time of year, including outside the non-CDQ seasons, it has additional value. Seafood companies are eager to extend their season and make their investments in equipment more profitable.

Similar to the initial application procedure, the state reviews CDQ allocation proposals every two years. Table 2.4 lists the basic items necessary for a proposal. The State of Alaska has committed few of its preferences and guidelines to official policy and regulations. Instead, it prefers to give CDQ groups flexibility to pursue their particular goals within the larger goal of the program, "to provide the means for starting or supporting commerical seafood activities in Western

Alaska that will result in ongoing, regionally-based commercial seafood or related businesses." (Ginter 1995: 156)

Table 2.4: CDQ Proposal Requirements

1	a request for a percentage of the CDQ reserve (individual allocations shown in Table 2.5).
2	goals and objectives concerning the development projects that will be undertaken.
3	a business plan including employment creation, vocational and educational training, business and loan relationships, budget formulation, and related information to assure that the proposal is realistic.
4	information about the managing organization that demonstrates an ability to manage a fishing operation and comply with regulations.

(adapted from Ginter 1995: 154)

As both stick and carrot to ensure compliance, the state makes the recommendation for allocation of quota among the groups every two years, as shown in Table 2.5.

Table 2.5: CDQ Pollock Allocations by Corporation

Approved CDQ Allocations	1992/3	1994/5	1995/6
APICDA	18%	18%	16%
BBEDC	20%	20%	20%
CBSFA	10%	8%	4%
CVFC	27%	27%	25%
NSEDC	20%	20%	22%
YDFDA	5%	7%	13%

(adapted from Ginter 1995: 154; Townsend 1996: 52)

Given the regional differences, the CDQ corporations have stated and pursued differing goals, though all involve a mix of "investing, training, and infrastructure development" and are "aimed at developing and improving the regional fisheries and overall

economies." (State of Alaska 1995: 14) Table 2.6 shows the stated development philosophies of the CDQ Corporations.

Table 2.6
CDQ Corporation Development Philosophies

APICDA	Create income and infrastructure generating business opportunities for the CDQ group in local communities and businesses.
BBEDC	Create an investment fund with which to invest in the seafood industry outside local, highly capitalized fisheries.
CBSFA	Use CDQ income to leverage local infrastructure development.
CVFC	Invest in ownership of offshore processor and use vertical integration and CDQ allocations to generate local employment.
NSEDC	Increase participation and profitability by residents in regional fisheries and invest in the seafood industry.
YDFDA	Train community residents as fishermen and finance vessel and gear loans and infrastructure development.

(adapted from State of Alaska 1995: 15)

In 1993, the NPFMC extended the CDQ program to halibut and sablefish in the Bering Sea and Aleutian Islands area, and the CDQ reservations for those species are determined by area. This amendment became effective in 1995 and occurred at the same time the NPFMC introduced Individual Transferable Quotas (ITQs) for the management of those fisheries. In the summer of 1995, the council announced that it would set aside 7.5% of all remaining Bering Sea fishery resources for CDQ groups. The reauthorization of the Magnusson Fisheries Conservation and Management Act, passed by Congress in 1996, put these quota reservations into law, and set a starting date of 1998 for the addition of other species to the program, though some, such as crab, will be phased in over a period of a few years.

Chapter 3:
Greenland & the Inshore Shrimp Fishery

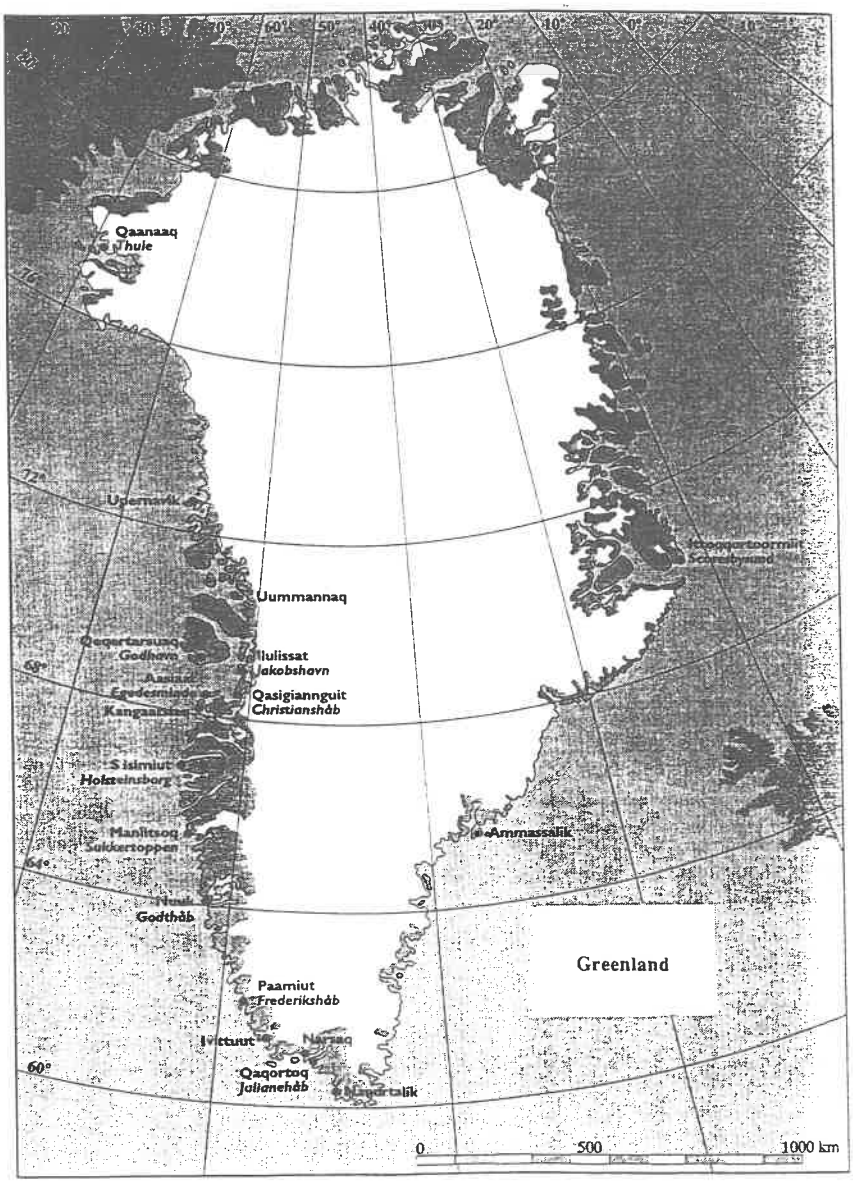


Figure 3.1: Map of Greenland

(source: Poole 1995: xvi)

Greenland is a part of the Kingdom of Denmark, but began assuming control over its domestic affairs in 1979. The tradition of Danish rule dates to the early 18th century when a Danish missionary, Hans Egede, journeyed to Greenland in a futile search for the remnants of earlier Norse settlements. Politically speaking, Greenland is divided into eighteen different *kommunes*, municipalities or regional administrative subdivisions, though three do not currently exist. Residents of twelve *kommunes* participate in the inshore shrimp fishery, from Nanortalik in the south, up the west coast to Qeqertarsuaq. However, most of the effort in the inshore fishery has traditionally centered on Disko Bay (Poole 1995). Therefore, these twelve municipalities, listed in Appendix Two, comprise the area of study in Greenland.

3.1 NATURAL ENVIRONMENT, CLIMATE, AND RESOURCES

3.1.1 GREENLAND

Greenland, shown in Figure 3.1, is the world's largest island with a total area of 2,175,600 km^2 , 85% of which is covered by an inland ice sheet. The remaining ice-free 341,000 km^2, a narrow belt of coastline, is indented with deep fjords and dotted by thousands of skerries and islands. Geologically part of the North American continent, Greenland is separated from Ellsemere Island by Nares Strait, a distance of only 25 km at its narrowest. The northern most point of Greenland, Cap Morris Jessup, at 83° 20' N, lies only 740 km from the North Pole, making it the most northerly point of land in the world. 2,670 km to the south, Cap Farvel, at 59° 47' N, is its southernmost extent. At its widest, Greenland stretches 1,050 km from east to west (Statistics Greenland 1995: 23).

While the climate is generally termed Arctic, the interplay of ocean currents, coastal features, and the inland icecap lead to considerable differences by region. Parts of southwest Greenland receive as much as a meter of precipitation annually, are relatively free of permafrost, and are mild enough to support modest agricultural efforts such as sheep farming. Temperatures in the far south range from a January mean of -15°C to a July mean of +8°C to +10°C. Northern areas can be quite harsh with mean temperatures of -30°C in January and +5°C in July and less than 20 cm of precipitation per year.

The rugged, coastal, ice-free belt supports sparse plant life, typically a mix of Arctic and Alpine tundra including lichens, dwarf willow and birch, grasses, sedges, and heath-type and other flowering plants. In the south, scrub willow and alder might reach two to three meters in height, but no forests as such exist. Only six to eight species of land mammal inhabit the island. These include reindeer, musk oxen, Arctic hares, and the Arctic fox. Greenland is also home to approximately 50 species of birds, more than half of which are migratory seabirds.

While Greenland does have a long tradition of mining activity, mines have always been few in number, and no significant commercial mines operate today. Over the last century, cryolite mines at Ivittuut yielded in excess of 3.5 million tons (Schønwandt and Dawes 1992). Smaller and less important lead and zinc mines operated at Mestersvig and Marmorilik. Large coal deposits exist on Disko Island and were mined for some fifty years. Other known ore deposits, including iron, uranium, anorthosite, chromium, molybdenum, and tungsten exist, but so far have not proven significant enough to justify the costs of development (Lyck and Taagholt 1987). Oil and gas

surveys of the west Greenland continental shelf and North Greenland, conducted in the 1970s, did not lead to any development, but interest in these resources has returned in the 1990s.

3.1.2 GREENLANDIC WATERS

Because of pack ice, fast ice, and drifting icebergs, much of the coastline has open water for only a few months of the year (Hibler 1987). The only year-round, ice-free coastline stretches from Sisimuit to Paamuit in southwest Greenland (Poole 1995). Fram Strait, off Greenland's east coast, is the major outlet for drifting Arctic Ocean pack ice, creating difficult shipping conditions and a cold local climate. However, this same current turns northward after rounding Cap Farvel and causes turbulence and mixing of nutrients in the water column, supporting a diversity of aquatic life (Lyck and Taagholt 1987).

More than 200 species of fish, crustaceans, and mollusks live in Greenlandic waters; five to eight of these are commercially significant in modern times. Numerous marine mammals either live in or migrate through Greenlandic waters, including five species of seals, walrus, polar bears, and ten to fifteen different types of whales. As early as the 16th century, English and Dutch whalers sought their prey off Spitsbergen, just east of Greenland. When those stocks began to decline, whalers moved westward into Baffin Bay and the West Coast of Greenland. By the end of the 18th century, many Greenlanders caught seals for the fur trade as well as oil, and the cod fishery, which began modestly in 1911, rapidly expanded through the first half the 20th century (Nuttall 1994).

3.2 PEOPLE

3.2.1 PRE-HISTORY

The earliest known inhabitants of Greenland arrived in north Greenland 4,500 to 4,000 years ago. These nomadic Paleo-eskimo groups likely followed and hunted land mammals such as muskox as their main prey. Successive groups, including the Thule who arrived about 1,000 years ago and are considered to be the ancestors of modern Greenlandic Inuit, hunted a mix of land and sea mammals with the later comprising a larger portion of their diet.

Linguistically, genetically, and culturally, Greenlandic Inuit share much with Canadian and Alaskan (Inupiat) Inuit. Anthropologists and Inuit themselves consider residents of all three countries to be part of the same ethnic group. Within that framework, however, significant differences exist. For example, the three Greenlandic dialects, western, northern, and eastern, are mutually unintelligible and local identities are strong.

As is often the case throughout the north, much of what we know today about pre-Christian spiritual beliefs comes from the missionaries that sought to destroy those beliefs. The Inuit world view consisted, and to some extent still consists, of an elaborate system of beliefs, taboos, and moral codes that regulated the behavior of Inuit towards animals and natural phenomena. This complex web of belief and practice, equipped the Inuit for a precarious and uncertain life. Accidents, illness, poor hunting, starvation, and bad weather all result from offending the spirits of animals or other natural forces. A shaman acted as an intermediary for the community and restored a proper balance.

Icelandic sagas and archaeological evidence tell of the Norse colonies in Greenland that lasted for some five hundred years, beginning in A. D. 985 (Sugden 1982). They subsisted largely by farming sheep and cattle and grew a few crops. When contact with Iceland and Europe stopped in the 15th Century, the Norse already knew of the *skraelings*, which translates as barbarians or Inuit. Reasons for the demise of the Norse settlements variously emphasize climatic change, disease, starvation, and direct or indirect competition with the Inuit (*Ibid.*).

3.2.2 HISTORY

In 1721, Hans Egede, a Danish Lutheran missionary, journeyed to Greenland seeking to minister to the relic Norse colonies. Instead, he found only Inuit and began to convert them to Christianity while bartering trade goods for furs and oil. The Danish crown soon took control of the trading enterprise and, after the failure of several private interests, ran the monopolistic company well into this century. In contrast to the general pattern of Arctic colonization, the Danish colonial policy was strongly protectionist and paternalistic. They discouraged contact with outsiders and endeavored to maintain the traditional subsistence hunting lifestyle supplemented by the fur trade. Climatic changes reduced the number of seals and brought large schools of cod to Greenlandic waters in the early 20th century (Nuttall 1994). In response to this change the Danish government fostered the development of a commercial cod fishery, marking the only divergence from this policy until World War II (*Ibid.*).

The occupation of Denmark by Germany stopped the flow of food, goods and money to Greenland. Combining strategic and humanitarian interests, the United States built several advanced

military bases in Greenland, imported goods for Greenlanders with the help of Canada, and exported cryolite to North America to produce aluminum for the war effort. These events brought tremendous change to Greenlandic society and highlighted the differences between their living standards and those of the developed world.

Sensing that isolation had caused most of the social and economic problems in Greenland, Denmark changed its constitution in 1953, and Greenland became an integral part of the country, a northern county in effect. Along with the legal changes, the Danish government channelled a host of resources towards modernizing Greenland's economy, investing in infrastructure, social welfare, and a modern fishing and fish processing industry (Poole 1995). The government "encouraged" Greenlanders in outlying settlements to move to larger towns with open-water ports, and many young Greenlanders received formal education in Denmark.

Concurrent with student counter-culture movements the world-over, those Greenlanders who had been educated in Europe, and exposed to the wider world, led a popular movement of people who wanted more independence from Denmark. In early 1975, Denmark established a formal Home Rule commission, composed of both Greenlanders and Danes, to investigate the situation and make recommendations for changing the legal relationship between Denmark and its former colony. Three years later, a Home Rule act passed the Danish parliament. After a popular referendum, the Greenland Home Rule Authority came into being in 1979, and Greenlanders began assuming control over most domestic affairs. Though still part of the Danish Realm, along with Denmark and the

Faroe Islands, Greenland formally withdrew from the European Economic Community, now the European Union, in 1985.

3.2.3 PRESENT SOCIAL CONDITIONS

The following figures, unless otherwise noted, all date to 1995 and have been taken from the Greenland Statistical Yearbook 1995/96 (Statistics Greenland 1995). Greenland has a total population of 55,000 to 56,000 inhabitants, approximately 7% of whom were born outside Greenland. Just over 80% of the population lives in the towns that are the seats of the country's fifteen *kommunes*, or municipalities. The remaining 20% live in 107 isolated settlements, including sheep farms and weather stations, that dot the coastline and fjords. The population of settlements has held steady since 1980. Nuuk, the capital and largest town with more than 12,000 residents, also contains the largest number of Greenlanders born outside the country, nearly 45% of its population. Three towns, Nuuk, Sisimuit, and Ilulissat, account for nearly half of the entire population.

While the massive influx of public spending has largely continued since Home Rule was established, living conditions, particularly in smaller towns and settlements, do not often match those of the western world. Much of the available housing is crowded or substandard; 45% to 56% of Greenlanders indicated that cold or draft was a significant problem in their home. Further, only 70% of Greenlandic homes have inside running water for the entire year. 38% of homes have no lavatory and 44% have no telephone.

Education levels remain fairly low as well. 20% of all Greenlanders did not complete their seven years of basic education. 47% of Greenlanders residing in towns and 65% of those from settlements

have no vocational or higher education. Unlike many northern areas, the native language is not in danger of disappearing. Conversely, few Greenlanders describe themselves as bilingual (speaking both Greenlandic and Danish equally well), and many types of employment require the ability to speak Danish. 29% of town residents and 60% of settlement residents speak no Danish whatsoever.

Travel between Greenlandic towns and settlements is both difficult and expensive. Most towns have airports at which fixed-winged aircraft land with some regularity, but due to the distances, weather conditions, and low number of paying passengers, costs are high. Many settlements are accessible only by boat or snowmachine. Health and social conditions reflect the isolation and quality of housing and health care available. While cancer rates are equal to those of western Europe, suicide accounted for 7% of all deaths in 1993. In that same year, accidents caused 6% of deaths and homicide a further 3%.

3.2.4 PRESENT ECONOMIC CONDITIONS

By any standard, the economy of Greenland is small, and the Home Rule Authority and other public entities employ the majority of Greenlanders (62%). The construction and manufacturing industries, together with traditional and commercial hunting and fishing, account for virtually all private jobs. However, this simple breakdown obscures exactly how limited the economy truly is. Most construction projects are for public buildings or housing or for some other quasi-public concern. Further, the manufacturing sector mostly processes shrimp. In essence, the formal economy of Greenland has rested on the twin pillars of public spending and the shrimp industry for a decade (Poole 1995).

Hunting and fishing in Greenland can be divided into four basic categories, though the lines between them are not always clear. These categories are: traditional or subsistence hunting and fishing, in which the catch is distributed among kin and community according to traditional patterns; informal commercial hunting and fishing in which the catch is sold at a stand by the local docks or outside a market; small scale-commercial fishing, ranging from ice-fishing for Greenlandic halibut, using dog teams to haul out the catch, to the inshore shrimp fishery; and offshore, large-scale commercial fishing, primarily for shrimp using multi-million dollar vessels and equipment.

Traditional foods still comprise a large portion of the Greenlandic diet, even among those residing in large towns. 38% of Greenlanders residing in towns and 74% of those living in settlements report that they eat traditional foods at least three to four times a week if not more. In 1994, 3,100 Greenlanders, virtually all of them men, held licenses as professional or full-time hunter-fishers, and an additional 4,100 held part-time hunter-fisher licenses. Unlike northern North America, traditional foods can be sold at informal markets, known as *kalaaliminerniarfiit* or *kalaaliaraq* (Nuttall 1992: 147), providing cash to pay for the modern tools of the trade such as rifles and outboard motors.

Given the few jobs available, it is no surprise that a relatively small, and generally Danish-speaking, elite, take a large share of the total income. In fact, the poorest 40% of Greenlanders only make 8% of the total national income. Figures from a forcoming article by Rasmus Ole Rasmussen (pers. comm.) indicate that income transfers, including but not limited to pensions, welfare, education, housing, and fur trade

subsidies, comprised roughly one fourth of taxable income in 1989-91 in towns and settlements. Direct social welfare payments such as old-age and disability pensions accounted for 20% of all public spending (Statistics Greenland 1995).

3.3 THE OFFSHORE SHRIMP FISHERY

As envisaged by Danish planners in the 1950s and 1960s, commercial fishing is Greenland's dominant industry. However, that industry is dominated in turn by exploitation of a single species, the deepwater prawn, also known as the northern shrimp (*Pandus borealis*) (Poole 1995; Arnason, R. and Friis, P. 1994). For most of this century, commercial fishing in Greenland focused on cod. By the mid-1970s, cod stocks dwindled. This change in abundance is generally related to a corresponding cooling of water temperature (Arnason, R. and Friis, P. 1994: 189-190). In their absence, shrimp fishing rapidly expanded. In 1994, a total of 58,355 tons of shrimp and fish (43,815 shrimp, 1,786 cod, and 12,611 Greenland halibut) were landed in Greenlandic waters for onshore processing, and a nearly equal amount was exported directly. The value of the shrimp and fish processed onshore totaled 424 million Danish kroner, about £42 million or $68.5 million U.S., in that year.

Based on the strength of the industry, Royal Greenland, the successor to the Danish colonial trading monopoly and now a public corporation owned by the Home Rule Authority, employs over 3,000 people world-wide (Statistics Greenland 1995) and is one of the world's largest fishing enterprises (Royal Greenland News 1991). The Greenlandic offshore shrimp fleet consisted of 46 vessels in 1991, eight owned directly by Royal Greenland. European Union member vessels also fish in Greenland offshore waters in exchange for a sizable

annual direct payment to the Home Rule Authority. Of the 46 vessels in the Greenlandic offshore fleet, all are at least 79 Gross Registered Tons (GRT) and highly modernized. At least 20 of the vessels are catcher-processors which process the shrimp on board and deliver a near market-ready product (Poole 1995: 40-45).

Greenland did not enjoy full jurisdiction over its fisheries until 1985, when it formally withdrew from the European Union, then known as the European Economic Community. Two years before the enactment of home rule, Denmark first asserted a 200 nautical mile fishing zone baseline, south of 75° N off the west coast and 67°N off the east coast. Three years later, the Home Rule Authority extended the zone around the entirety of its coastline, following a midline when the distance to a neighbor was less than 400 nautical miles (Poole 1995). Currently, the Greenland Home Rule Authority establishes a TAC for most of its home waters based on advice from the North Atlantic Fisheries Organization (NAFO) and the International Commission for the Exploration of the Sea (ICES) for their respective subdivisions. Since 1991, the offshore fishery has been managed by an individual transferable quota (ITQ) system of privatized ownership.

3.4 THE INSHORE SHRIMP FISHERY

The inshore fishing fleet is the economic mainstay of Greenland's coastal settlements and small towns, and shrimp is the most important marine resource in Greenlandic waters (Arnason, R. and P. Friis 1994). Local Greenlandic fisherman have exploited inshore shrimp stocks, at least in the vicinity of Disko Bay, since before World War II, making it one of the older fisheries in the country. From the 1950s to the mid-1980s, fleet capacity and catch held fairly steady, and landings averaged around 9,000 tons annually (Poole 1995). At the time of the

boom in the offshore fishery, the early to mid-1980s, the inshore fleet grew as well. In 1987, concern over the future of inshore shrimp stocks led the Home Rule Authority to regulate fishing capacity. The initial attempt was simple, but management regimes have steadily evolved over the past decade.

As of November 1987, new entrants into the inshore fishery had to obtain a license which could only be granted when a vessel, or vessels, of equal capacity left the fishery. In spite of this control, total catch in the fishery rose to 24,701 tons in 1992. Until 1989, vessels registered in ports south of 68°N could not fish north of this limit, dividing the west coast into two regional fisheries. Though several factors are likely to prevent a total collapse in inshore stocks, such as recruitment from offshore stocks, ice conditions which limit the fishing season for much of the year north of Sisimuit, and substantial areas of untrawlable seabed, yields per trawl time decreased throughout the first half of the decade.

Responding to the need, a new attempt to regulate fishery capacity became effective on November 21, 1991. This market-based system incorporates some elements of a classic ITQ system but is based upon fishing capacity not effort. Table 3.1 summarizes the main points of the capacity-points system.

Table 3.1: Main Features of the Capacity-Points System

a All vessels participating in the fishery must have a valid license.
b Licenses do not need to be renewed.
c All vessels for which a license was held as of 1st December 1991 were assigned a specific number of vessel points according to average catches over the period 1987-90 (or from the year of entry onwards if a vessel entered the fishery after 1987). One vessel point was awarded where average catches fell below 50 tons, two vessel points were awarded where average catches lay between 50 and 100 tons and so on.

d All vessels for which a new license is sought are to be assigned a certain number of vessel points corresponding to estimated fishing capacity arrived at from information supplied to the GHRA on length, width, hold capacity, provisions for accommodation, year built, and winch and motor horsepower. The number of vessel points assigned to the vessels concerned is fixed in accordance with the scale specified above.

e Cases where extensions, modifications or repairs to vessels increase fishing capacity are to be accorded a revised number of vessel points in a similar fashion to that described in point (d).

f Those individuals, groups of individuals or companies in possession of a valid license as of 1st December 1991 (but not those who made landings only in 1987 and landed less than 100 tons in this particular year) were awarded a number of owner points equaling the number of vessel points allocated under point (c).

g Owner points are marketable, but speculation and leasing is prohibited.

h The GHRA shall be informed of all transactions involving owner points.

i The local authorities cannot buy or sell owner points.

j Owner points can be inherited.

k For a license to be valid, the number of owner points a party holds must at least match the number of vessel points possessed.

l The GHRA is able to increase or decrease the maximum total fishing capacity that can be employed in the fishery by changing the number of owner points required before new licenses can be granted to prospective entrants. This is accomplished by increasing or decreasing the value of a single vessel point expressed in terms of tons fishing capacity. Such a change applies only to vessels for which a new license is sought.

(adapted from Poole 1996: 360-1)

Poole (*Ibid.*) outlines four main objectives for the capacity system: reduction of administrative burden, regulation of total fishery capacity, dynamic fleet development, and encouragement of inefficient fishers to be replaced by more efficient ones. This capacity-points system operated until November 1, 1996 when the GHRA adopted an ITQ system for the inshore fleet.

Today, the inshore fishery plays a crucial role in the economy of Greenland, but most of its participants rarely, if ever, record a profit. The 140-150 vessels in the inshore fleet catch and deliver

approximately two-thirds of the shrimp processed onshore by Royal Greenland (*Ibid.* 1995: 172). In fact, inshore vessels cannot legally sell to another buyer. All told, the inshore vessels employ somewhere above 750 crew members and skippers and create the equivalent of 300-350 full-time processing jobs (*Ibid.*). However, despite legal attempts to rationalize the fishery, the overwhelming majority of inshore vessels perform poorly and do not realize a profit.

Due in part to old and inefficient equipment and vessels, catches are small. Between 1987 and 1989, just 27 vessels caught 50% of the total volume of shrimp for those years. Conversely, the bottom third of vessels averaged landings of less than 50 tons per year during that time. Not surprisingly, 90% of inshore vessel owners remain in arrears on vessel and equipment loans even with the generous terms provided by the public loan agency (*Ibid.*). Because of the lack of alternative employment, most unprofitable fishermen have few incentives to leave the fishery. Recognizing the economic situation of loan holders and potential political troubles, government seizures of vessels and assets for nonpayment of loans are extremely rare. In sum, the GHRA faces a dilemma. Conservation of the shrimp stocks and rational use of labor and capital, the two standard fishery management objectives, require a reduction in the number of vessels in the fishery. Unfortunately, reducing the number of vessels will only increase unemployment for those with few alternatives.

Chapter 4:
Literature Review & Criteria Development

The most logical reason for development in Western Alaska's coastal villages and the settlements of Greenland to focus on fishery resources is that they are available; they exist to be exploited and are renewable. As indicated in the prior two chapters, land-based resources are in short supply and the history of each area reflects this, with long traditions of marine resource utilization. However, the simple criteria of availability is only one of a number of factors which will affect the success of a program designed to overcome "obstacles to desired forms of change," both social and economic.

This chapter reviews and highlights elements of five works that each deal with development in remote regions from different vantage points. Because several of these texts are quite large, the review focuses specifically on ideas crucial for the building of a successful development program. It then identifies common elements from the different works to develop evaluation criteria for the two regimes under scrutiny.

4.1 REVIEW OF DEVELOPMENT LITERATURE AND MODELS

4.1.1 BERMAN'S 'STRATEGIES FOR ECONOMIC SELF-RELIANCE'

In a short paper, Berman (1986) sought to discover what types of economic activities hold the most potential for the economic self-reliance of rural northern communities. Importantly, his goal was the self-reliance of these communities, not just wage-job creation. In other words, while he focused on activities that take place within the scope of traditional economics, such as wage-earning jobs, he did not neglect to account for their impact on activities customarily outside the view of economists, such as subsistence hunting and gathering. He rightly notes that "indiscriminate efforts to promote employment

and income growth may do more harm in terms of unrealistic expectations and social disruption than good." (Ibid. 1986: 2)

He reviewed economic enterprises based on three basic criteria: technical suitability, comparative advantage, and economic feasibility. For Berman, technical suitability included two important factors. First, small groups or households must be able to successfully carry out the activity. Second, the activity cannot damage or inhibit hunting and fishing activities unless it offers enough permanent income to reduce the necessity of hunting and fishing for survival. Comparative advantage means the technically suitable activities in which the "combination of cash income and noncash benefits" meets with participants' preferences. Finally, economic feasibility requires that the activity yields sufficient income for some community members or households to prefer the activity to the combination of transfer income and more leisure time.

Guided by these three ideas, Berman found that hunting, trapping, and fishing activities represent the best hope for rural northerners to achieve self-sufficiency. Most northern communities have been centered on a sufficient natural-resource base for hunting, fishing, and trapping since pre-contact times. Further, commercial and subsistence activities based on those resources take place side by side and use many of the same tools and methods of production. The remainder of Berman's paper examines income potential from each of these activities in different regions of Alaska and suggests how it may be improved, focusing on specific ways to increase control over and access to resources for Native Alaskans.

4.1.2 LANGDON'S SUITABILITY CRITERIA

In an article published in 1987, Steve Langdon addressed the issue of the suitability of commercial fisheries in Western Alaska as a development opportunity for Alaska Natives. In doing so, he developed his own criteria, but they echo several themes found elsewhere in the literature. He found four primary reasons to support the idea:

1. "it builds on technical skills and environmental knowledge congruent with subsistence hunting, fishing, and gathering activities learned as part of growing up in the village.
2. it is seasonal, allowing for subsistence activities.
3. the work organization of commercial fisheries follows the domestic mode of production which organizes subsistence production.
4. it is egalitarian and maximizes opportunities for autonomy and independent decision making, minimizing hierarchical relationships between persons." (*Ibid*. 1987: 22-3)

It should be noted that he focused on the salmon and herring fisheries of the area, not bottomfish, and that this article was published five years before the CDQ program came into being. Overall, his arguments and conclusions show that state policy had neglected to fully exploit this opportunity for Native development, instead allowing many of the benefits to accrue to fishermen from urban Alaska and farther afield. The "work production" in Langdon's model refers to summer fish camps, a feature absent in both programs being examined. These fish camps are located near the mouths of rivers and have been used by families to harvest salmon since traditional times. Because both pollock and shrimp are nontraditional species and are not caught in such a manner, this does not apply.

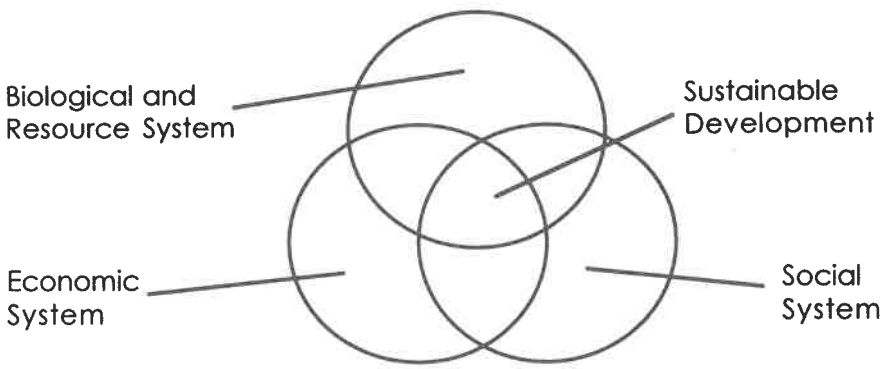
4.1.3 SUSTAINABLE DEVELOPMENT

The publication of Our Common Future by the World Commission on Environment and Development (1987: 43) pushed the already

popular idea of sustainable development, which it defined as "meet[ing] the needs of the present without compromising the ability of future generations to meet their own needs," to the forefront of the world's imagination. Seizing this concept, many have attempted to incorporate notions of sustainability into their planning and policy making. In practice it has proved difficult, and some suggest that sustainable development is an oxymoron (Flanders 1992). Returning to the case at hand, the two fishing regimes pass the test at first glance. Fish are a renewable resource, and the regimes in place manage on a maximum sustained yield basis. However, more complete models of sustainable development set a higher standard.

Barbier (1987) explained his view of sustainable development with a fairly simple but useful model. It consists of three main parts: the biological and resource system, the economic system, and the social system. According to the model, shown in Figure 4.1, sustainable development occurs in the area in which the three systems overlap, that is, when it incorporates all three systems.

Figure 4.1: Barbier's Sustainable Development Model

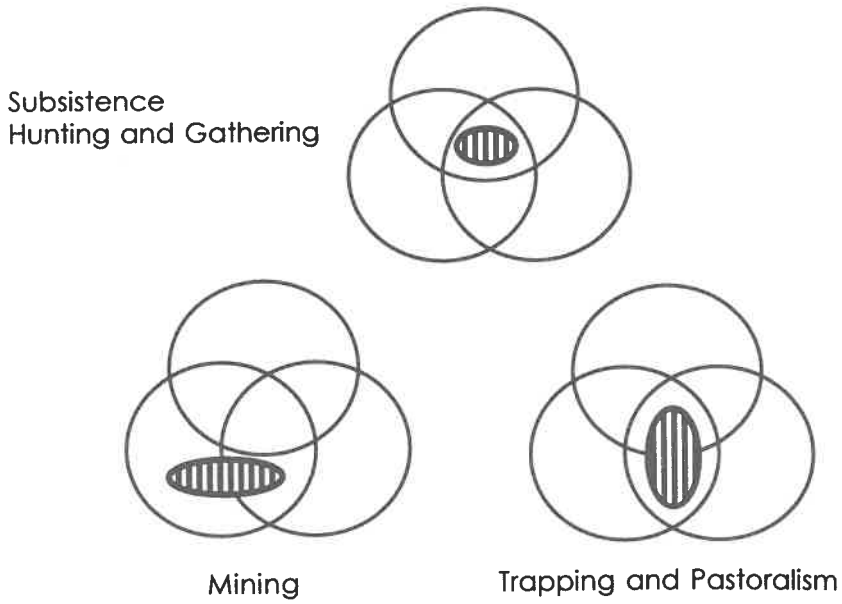


(adapted from Barbier 1987: 104)

Several restraints keep the model from being more precise. First, it must consider both quantitative elements, such as employment, and more qualitative ones, such as social cohesion and stability. Also, development is a dynamic process, and, as such, participants must constantly measure trade-offs such as increased production versus environmental degradation. Likewise, as social, economic, and environmental considerations vary by region so do local priorities. However, despite its limitations, the conceptual model forces users to consider other aspects and consequences of development besides the economic ones.

Young (1995) took this model and applied it to development opportunities available to indigenous people in Australia and Canada, placing activities within their appropriate spheres.

Figure 4.2: The Sustainable Development Model Applied to Subsistence Hunting and Gathering, Mining, and Trapping and Pastoralism



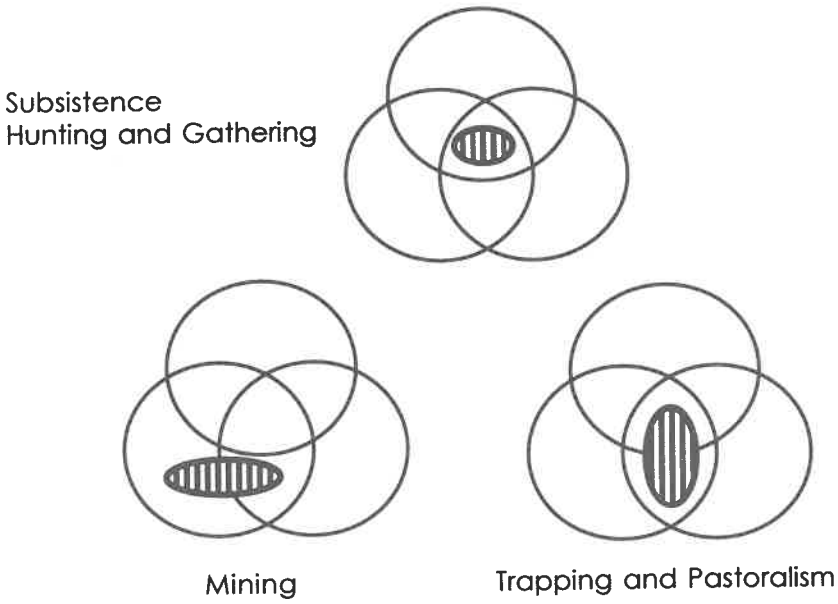
(adapted from Young 1995: 264)

Figure 4.2 shows his placement of three types of activities. For example, mining development includes economic aspects which, when governed by strict environmental-impact regulations, can

Several restraints keep the model from being more precise. First, it must consider both quantitative elements, such as employment, and more qualitative ones, such as social cohesion and stability. Also, development is a dynamic process, and, as such, participants must constantly measure trade-offs such as increased production versus environmental degradation. Likewise, as social, economic, and environmental considerations vary by region so do local priorities. However, despite its limitations, the conceptual model forces users to consider other aspects and consequences of development besides the economic ones.

Young (1995) took this model and applied it to development opportunities available to indigenous people in Australia and Canada, placing activities within their appropriate spheres.

Figure 4.2: The Sustainable Development Model Applied to Subsistence Hunting and Gathering, Mining, and Trapping and Pastoralism



(adapted from Young 1995: 264)

Figure 4.2 shows his placement of three types of activities. For example, mining development includes economic aspects which, when governed by strict environmental-impact regulations, can

extend into the environmental/resource sphere as well. While a few companies have experimented with work schedules that allow for traditional social structures and subsistence pursuits, these are the exception that prove the rule, and, thus, Young does not show mining as falling into the social category. As seen in the Figure 4.2, subsistence hunting and gathering incorporates all three elements: social, through sharing of catch; environmental by its fundamental reliance on natural resources; and the economic, both monetary, for equipment and transportation, and non-monetary, for providing food and products for household consumption.

Of the activities discussed by Young, trapping and pastoralism offer the closest parallel to commercial fishing. Small-scale efforts aimed at providing for local needs fall within all three areas of concern. Efforts directed towards commercial markets and export move into the area in which only the economic and environmental spheres overlap. Essentially, the model indicates a spectrum of activity, and any given enterprise may have a foot in both the social, and thus sustainable, and non-social camps.

At the close of his treatise on aboriginal development, Young (1995: 272) outlines six fundamental components of a practical approach to sustainable development for indigenous people of remote regions:

1. "acknowledgment of the need for aboriginal control over development both at national and regional levels and also at community levels;
2. recognition of the social and economic diversity of aboriginal communities, and of how this affects their responses to development opportunities;
3. negotiation (a step beyond consultation) to ensure both that the development is following an appropriate path, and that those concerned get their fair share of the benefits flowing from it;

4. deliberate fostering of aboriginal skills to enhance their chances of more equal participation in development affecting them;
5. creation of an aboriginal resource base, over which they exert control in ways which allow them to determine how these resources might be used for development.
6. provision of adequate and appropriate forms of financial backing so that aboriginal groups and individuals can offer the capital needed to carry out their plans."

Having examined subsistence, tourism, mining, and community stores, Young gleaned these ideas from the successes and failures of those enterprises in the remote regions of Canada and Australia.

4.1.4 INFORMAL -VS- FORMAL ECONOMIC ACTIVITY

Ross and Usher (1986) suggest a somewhat different way of looking at economic activities and development. Largely intended as a critique of mainstream Canadian and American industrial economies, their work emphasizes the importance of the informal economy, much neglected by current economic thought and policy in their view. They define the "essence" of the informal economy as "a democratic collective involvement, where decision making in economic organizations is directly responsible to the households and communities that support them and depend on them." (*Ibid.* : 129) They stress the fact that while formalized industry has brought a wider range of products to the market, "it is less evident that personal satisfaction is derived from industrially produced goods and services." (*Ibid.* : 54) To their way of thinking, because we have not attached an economic value to the "social fabric," modern economic policy ignores it and subsequent damage done to it by the formal, industrial economy.

To provide a model of a community that relies upon and values a higher level of informal economic activity, Ross and Usher describe

the village economy of the indigenous people living in remote regions of Canada. This small-scale subsistence lifestyle, in which extended households and local communities rely on each other to provide goods and services, typifies informal economic activity. All is not well in the village economy, however, despite its high reliance on informal economic activity. A simple glance at the economic conditions in Chapter Two and Three of this thesis reveal the lack of wage jobs and basic industry in the two study areas selected, and remote regions in general. Ross and Usher state it simply, "the village economy in recent years has suffered a chronic shortage of cash." (*Ibid.* : 144). This lack of capital leads to another serious problem, vulnerability to "events and decisions" beyond the "knowledge and control" of the village (*Ibid.* : 148).

They list six factors or characteristics that, when viewed as whole, distinguish formal from informal activity, shown in Table 4.1.

Table 4.1: Characteristics of Formal Economic Activity

1	isolation of production and consumption roles
2	use of contracts
3	effects of a competitive environment
4	results of specialized economic roles (and the deskilling that results)
5	use of hierarchical and authoritative organizational structures
6	constant pursuit of modernization and growth

(adapted from Ross and Usher 1986: 21)

Formal activities are not altogether bad, though. The village economy necessarily includes a formal, or wage, element. Ross and Usher state this point succinctly, " It must be kept in mind that much informal activity can flourish only if some cash flow and material support is available to sustain it in a healthy state." (*Ibid.* : 121) For

remote regions, then, the crucial question is: does an activity provide adequate cash input for the informal economy while avoiding serious damage to it?

4.2 CRITERIA DEVELOPMENT

Despite the different viewpoints, several common themes emerge in the highlights above. Chief among them is the issue of control which extends to all areas of a development enterprise. By the working definition of this thesis, remote regions lack autonomy, both political and economical. Berman implied the lack of control that northern communities have over their fates in his title, "Strategies for Economic Self-Reliance in Northern Villages." In Barbier's model, the constant need for evaluating the trade-offs between the three spheres of activity calls for local control to ensure the balance suits local desires at any given time. Ross and Usher argue that it is indigenous people themselves who should define the proper balance between formal and informal economies. The need for local control is also echoed in their statement that the village economy is "increasingly vulnerable to events and concerns beyond its knowledge and control. (*Ibid.*: 148) Young directly confronts the issue as well. Two of his six components of practical approach to development use the words "aboriginal control" and several more reinforce the idea.

If the ability of northern communities to exercise control over their own lives is to be meaningful, it must include control over a substantial resource base. As identified by Berman, successful development depends on adequate resources, generally renewable resources such as fish and game. The conclusion of Langdon's article is that the state had effectively excluded Alaska Natives from a

logical and feasible development opportunity by limiting their access to local fishery resources. In his long list, Young addresses this issue as well. He notes the need for "creation of an aboriginal resource base, over which they exert control...." (Young 1995: 272). Closely associated with the idea of a resource base, northern communities must also possess, or have access to, the capital to "carry out their plans" for those resources, as noted by Young (*Ibid.*). Ross and Usher stress this crucial point by noting the inability of northern communities to save cash and link this fact to their fundamental dependence on outside forces and actors.

Obviously development must create jobs, and the number of jobs will be outlined in Chapter Five. However, the nature of those jobs is critically important for northern communities. The social organization of both the enterprise and the method of production must closely align with local values or few participants will elect to take part in them. Two of Berman's terms, technical suitability and comparative advantage illustrate this point. If development does not yield the "combination of cash income and noncash benefits" preferred by community members, it is not an attractive alternative (Berman 1986: 5). Similarly, the work production itself should not conflict with traditional structures. Langdon (1987: 22-3) echoes this concern, emphasizing appropriate "work organization" and "minimizing hierarchical relationships." Concerns about the social aspects of economic activity also lie at the heart of Ross and Usher's celebration of the informal economy.

The social organization of work activity and structures is linked with the question of time. Among the advantages Langdon lists for commercial fishing is its seasonality, allowing time for subsistence

pursuits during the remainder of the year. In describing the competing yet linked formal and informal economies, Ross and Usher accent the competition for labor, or time. They underscore this idea by adding that, "wage income is not always an addition to net income." (Ross and Usher 1986: 148) In other words, "losses from the traditional sector would have to made up by substantially greater amounts of wage income to provide purchasing power, quite apart from social considerations." (*Ibid.*)

Another issue related to the organization of work activities is the possession or acquisition of sufficient skills by indigenous people in order to take advantage of development that does occur. Three of the authors address this criterion. Berman uses the term technical suitability to characterize activities in which northern communities can participate. Langdon notes that commercial fishing builds on existing skills, and Young calls for the opportunity to develop new skills as needed to enjoy the full benefits of development projects.

Finally, though not mentioned by any of the authors examined in this chapter, this thesis adds another criterion to the assessment process. Because of the integral role of government in the two programs under scrutiny, their long-term political viability is vitally important. Issues such as control over and access to public resources constitute one of the essential roles of government. They involve questions of social equity and are often highly divisive, placing interest groups in adversarial positions. Therefore, development programs must have sufficient public support or they will not last long enough to assist indigenous people of remote, northern regions to "overcome obstacles to desired forms of change."

4.3 CONCLUSION

A survey of relevant development literature reveals several common threads for the weaving of a successful development program. The central issue is control. Indigenous participants must be able to ensure that development incorporates local concerns and meets local needs. Furthermore, control is meaningless if participants do not have adequate resources and capital with which to create viable enterprises. The social organization of development enterprises, both in their management structure and method of production must embrace indigenous beliefs and patterns of behavior, otherwise they will destroy the unique social fabric they have been created to maintain. Two important subsets of appropriate social organization are time and the fostering of skills. Remembering the high level of informal economy both preferred and required in the village economy, development activities must allow time for these pursuits. The enterprises must also rely on existing skills and foster new ones when necessary and desired, if indigenous people are to be able to fully participate in them. Finally, because the two programs being examined in this thesis are sponsored by government, their long-term political viability is crucial to their success.

Chapter 5: Analysis

5.1 CONTROL

Debates about development often center on the issue of control. However, the issue of control is difficult to discuss in isolation. Because "control" logically implies control over something, the issue pervades the entire chapter. As a result, this section primarily discusses the influences of governments and markets on resources that the inhabitants of the CDQ region and the participants in the inshore fishery nominally control.

Much of modern development literature critiques the "top down" approaches of the past and suggests transferring greater property rights, to both land and natural resources, to indigenous groups as a first step to self-sufficiency (Huskey and Morehouse 1992). Young (1995: 8) identifies this as "what many people would see as the prime challenge of development." As noted in Chapters Two and Three, the transfer of control over resources has happened at the macro-level to varying degrees in both Alaska and Greenland. On a more local scale, both the CDQ program and the capacity-points system of the inshore fishery invest indigenous people with some control over fishery resources.

The issue is not so straightforward, however. Simple legal control over resources is not enough to dictate the pace and character of development. In both cases at hand, the fishery focuses on a species not harvested in traditional times and production is ultimately geared for export to foreign markets. Basic economics tells us that resource production takes place when the market price at least covers the costs of production and transportation, and resource prices are "notoriously" cyclical (Huskey and Morehouse 1992: 131). The slump in pollock prices in 1993 and, similarly, the dive in prices for shrimp in

1992 clearly illustrate this dependence on the forces of distant markets. However, the paucity of other available resources give these people few options, and the same market influences govern all resource development in remote regions and, indeed, anywhere in the world.

In addition to market forces, other factors affect development of resources that indigenous people nominally control. Government decisions about development, based on those resources, also highlight concerns about local autonomy. First and foremost, the CDQ program is a government program, administered by both state and federal agencies, so control over development ultimately rests with those officials. However, the Alaskan state government, in its development role, has not employed a "one size fits all" approach. The state encourages CDQ corporations to exercise a fair amount of local control, as seen in the various "development philosophies" in Table 2.6, and to tailor operations to suit local needs. This is facilitated by the use of informal communication channels and the absence of the highly detailed regulations normally associated with government grant-type programs (Townsend 1996).

In its report to the NPFMC on the 1996-98 allocation decisions, the State of Alaska listed its most detailed CDQ policy. It named four primary criteria for evaluating CDQ corporations: "past compliance, past performance, need, and 'merit of proposal for future'." (qtd. in *Ibid.*) Several examples of changes in allocations illustrate this policy. As shown in Table 2.3, Central Bering Sea had its pollock quota allocation reduced twice, from 10% to 8% and then again to 4% of the total available CDQ, because of compliance concerns (Townsend 1996). The state's most direct intervention in the workings of

corporations to date involves Coastal Villages. Concerned over a "disappointing contract with their harvesting partner," the state split the Coastal Villages pollock allocation for 1996-98 (qtd. in *Ibid.*: 14). It gave 18% to Imarpiqamuit Partnership, Coastal Villages' harvesting joint venture which had enjoyed the full quota until that time, and the remaining 7% went to a new and small Coastal Villages nonprofit investment fund which could then lease the quota to another company. In sum, the state rewards corporations that perform to certain standards by the quota allocation process and punishes those that do not, but it clearly expects some innovation as well. The state has generally avoided direct involvement with the workings of CDQ corporations but intervened when it felt it was necessary.

The decision by state officials to limit investments to fisheries-related activities demonstrates a potentially damaging exercise of control (*Ibid.*). The State of Alaska has always resented vessels from the "lower 48," particularly Washington and Oregon, catching a large share of resources from Alaskan waters. For instance, these issues arose during the debate over Alaska's statehood in the late 1950s. Many of the fisheries in the Bering Sea region are already fully exploited and over-capitalized. Further investment by CDQ groups in fisheries activities must "either buy out existing capacity or result in over-capitalization." (*Ibid.*: 39) Competition between fishers sponsored by Yukon Delta and Norton Sound over the small Norton Sound crab fishery, and the resulting build up of overcapacity, has already led the NPFMC to implement a new limited-entry system. So far, Bristol Bay, whose region hosts the intensively-capitalized and highly-valued salmon fisheries, has at least paid lip-service to avoiding over-capacity in its development plans, but it remains a difficult issue throughout the CDQ region. The problem of over-

capitalization is exacerbated by the nature of the seafood industry. In his review of ANCSA regional corporations, Colt (1991: 3) noted that seafood-processing investments were some of the worst performing investments made.

In Greenland, because the inshore fishery involves more than just a single program, the controlling influence of the GHRA is more difficult to discuss. The management structure of the fishery itself is technically under "aboriginal control," as is the rest of the GHRA, and KNAPK, the small fishermans' union does assert itself. However, inshore shrimp fishermen are not the most powerful interest group lobbying the *Landsting*, the parliament of Greenland. On fishing issues, the sheer economic strength of Royal Greenland and the offshore trawlers, both foreign and Greenlandic, exert a powerful influence on fisheries policy. In the inshore fishery, fishermen have some control over how they catch their shrimp, i.e. who they choose as crew and what sort of hours they work, but once they land the shrimp, their options narrow dramatically. Shrimp from the inshore fishery must be sold to local Royal Greenland plants (Friis, P. pers. comm.).

5.2 RESOURCES AND CAPITAL

5.2.1 RESOURCE BASE OF THE CDQ PROGRAM

The design of the CDQ program reflects the long struggle by rural, Native Alaskans to participate in commercial fisheries. The limited-entry program, enacted in 1973 and implemented in the Bering Sea in 1975-76, typifies this struggle. Briefly, a limited-entry permit system establishes a set number of fishers in a fishery, identified by the type of gear as well as by area. Then, permits are distributed, generally based on prior participation in the fishery, to fishermen. Thereafter, no one can enter the fishery without a permit, which can be bought and sold

similar to other property rights. Once the system began in Alaska, permits began to flow out of rural areas. For poor performers in the fishery, the economically rational act was to sell the permit which was be valued on average catches that were higher than their own. In general the poorer performers were, and still are, Alaska Natives because they lacked capital and had not participated in the fishery as long as outsiders. Further, linguistic and bureaucratic difficulties often prevented them from taking advantage of state loan programs to upgrade their equipment. Permit ownership by rural Alaskans dropped by 9.5% in the first seven years that system operated (Langdon 1987: 18). Attempts by the state government to turn the tide, mainly through a special loan program, were largely ineffective and the trend has continued.

Another difficulty with the limited-entry system also tempered the structure of the CDQ program. The limited-entry law took effect before a large generation of youth born in Western Alaskan villages reached adulthood (Ibid.: 15). When they did, the permits had already been granted, and they had few alternatives. Several of this generation chose to work for a relative in the hopes of inheriting a permit, but obviously that route was not available to all. Moreover, without any significant capital reserves, the purchase of permits from nonlocals remains virtually impossible.

With this experience in mind, the CDQ program invests Alaska Natives with a different type of right to fishery resources. The program allocates a percentage of the TAC for pollock, halibut, and sablefish in the Bering Sea region to communities, instead of to individuals. Therefore, the community retains the right to catch a certain amount of fish for the life of the program, subject to allocation decisions by

the state. The communities can lease their quotas for up to two years, the length of the state's allocation period, but they cannot sell the fundamental right to the resource. It is inalienable from the community.

By any measure, the value of the CDQ allocations is significant. 7.5% of the TAC for Bering Sea/Aleutian Islands area pollock has averaged about 100,000 tons annually since 1992. Using a mean weighted value for landed pollock of $200/ton, that equals $20 million (Townsend 1996: 19). Moreover, due to the special features of the CDQ, corporations have been able to obtain lease values that reflect virtually all of the landed price (*Ibid.*). Because the CDQ can be fished outside the normal pollock seasons, it prolongs use of vessels and processing equipment, making investments in these areas more efficient. It also allows companies to "tune up" their crew and operations for the intense Olympic pollock seasons and produce a fresh product for the market for a longer period of time.

The NPFMC introduced CDQs for halibut and sablefish in 1995. The sablefish quotas engender few returns for CDQ corporations because of their size. Residents of western Alaska have not traditionally targeted sablefish so leases similar to those for the pollock quota would appear to be an appropriate mechanism for CDQ corporations to utilize their quota. Unfortunately, finding a market for such small quotas has been a difficult task (Townsend 1996).

The value of the halibut allocations vary dramatically by region, due in large part to the availability of species. In some areas it is substantial. In others, returns barely cover the cost of the required monitoring measures. Because halibut can be caught from small

inshore vessels, all CDQ groups distribute their quota among local fishers, creating local Olympic fisheries. The village of Atka, in the form of the Atka Fisherman's Association, a subsidiary of APICDA, received a quota equaling 462,000 pounds. Accordingly, APICDA plans to invest some earnings from its pollock lease to further local harvesting and processing. With local processing facilities operating, the value of Atka's quota should lie somewhere between $700,000 and $900,000 annually (Ibid.). Such a fishery could transform the economy of this village of approximately 100 people. On the other hand, the quotas allocated to Bristol Bay and Coastal Villages accounted for "little more than administrative nuisances" for both groups (*Ibid.* : 23).

5.2.2 CAPITAL IN THE CDQ PROGRAM

Because of the value of pollock CDQ rents, the capital base and the resource base in the CDQ program are one and the same. The state and federal governments appropriate no further public funds, other than administrative costs, towards the program. As indicated above, the pollock rents are substantial, and profits have financed a host of vessels, permits, and infrastructure development such as processing plants that add value to local catch.

The different philosophies of each corporation, illustrated in Table 2.4, have resulted in distinct routes to development. Yukon Delta Fisheries Development Association has financed the construction of a distant-water, small-boat fleet. Targeting species outside their local area, the multi-purpose vessels fish for halibut and groundfish off the Aleutian Islands, crab in Norton Sound, and salmon and herring in both the Norton Sound and the Yukon Delta regions. Coastal Villages concentrate their efforts on two joint-venture projects: a catcher-

processor vessel that targets pollock and a salmon-buying and processing operation aboard the *Lucky Buck* (*Ibid.* : 31). Central Bering Sea concentrated on building large-scale port infrastructure to attract fishing activity to the area. Questions about the possibility of attracting development led Central Bering Sea to change strategies in its most recent development plan.

Norton Sound, along with its fishing partner Glacier Fish, launched the most successful CDQ development venture in 1994 (*Ibid.*). As the northernmost CDQ corporation, the smaller number of marketable fish species and greater distance to ongoing fishing activity, dramatically limited fisheries development options. Norton Sound asked Glacier Fish to analyze market opportunities for several runs of pink salmon, the even-year runs in particular, in the area that received little commercial attention. Using a pollock catcher-processor, Glacier Fish bought pink salmon from local fishers and processed them, with the same equipment used for pollock, into "deep skin blocks." These blocks are then, in turn, processed into "fish burgers" and other uniform portion food products similar to those made from whitefish. Expecting new market opportunities for the product, Glacier Fish, and several other companies, expanded their pink salmon buying efforts to other areas of Alaska in order to produce more "deep skin blocks" the following year. Norton Sound has started a further joint venture with Glacier Fish to ensure an annual market by buying and processing pink salmon from other areas during the odd years.

5.2.3 RESOURCE BASE OF THE INSHORE SHRIMP FISHERY

Greenland's history of fisheries management regimes has been much different than Alaska's. In general, the number of commercially significant species is much smaller and dominated by shrimp, and

management programs are much younger. The GHRA established an ITQ system for the offshore shrimp fishery in 1991. At the same time, it adopted the capacity-points system for the inshore fishery. The salmon fishery also has a licensing system, but the economic value of Greenland's salmon fishery is minuscule compared to that of shrimp. In 1992, the monetary returns were equal to .72% of the shrimp harvest (Flanders et al. 1995: 15).

The management regime of the inshore shrimp fishery is not the result of a single united plan to restructure the economy of the smaller towns and settlements of Greenland. Instead, it has developed over time as a series of responses to various economic, biological, and political considerations. Many of the remaining small settlements exist in their present location because of the cod fishery. They were moved to take advantage of that resource. Similarly, some of the vessels in the fishery, particularly the small ones, were built for the cod fishery and have since been adapted for shrimp harvesting. While the GHRA and Greenlandic law recognize the importance of "economic and employment considerations in the fishing industry, the fish-processing industry and other related trades," the goals of the inshore fishery are only partially development oriented (Greenland *Lansting* 1996: 1). Nonetheless, the fact remains that the inshore fishery is a major private employer in the remote regions of Greenland, its small towns and settlements.

The capacity-points system grew from a desire to conserve the shrimp stock and rationalize the fishery. At that time, overcapacity, was increasing the effort-per-catch ratio, a sign of dwindling stocks. The large number of vessels with low-volume catches also reduced the overall value of the shrimp caught and increased costs for Royal

Greenland's processing plants. The high frequency of low-volume catches decrease economies of scale for all phases of handling the shrimp. Further, the increased heterogeneity and instability of shrimp freshness, quality, and size, resulting from this problematic fleet structure, create similar difficulties (Poole 1995: 175).

When the system was adopted, the GHRA allotted 607 capacity points among all inshore fishers (Friis, P. pers. comm.). If a new fisher wished to enter the fishery, or a current participant wished to upgrade his vessel or equipment, he had to purchase a sufficient number of points from other fishers to account for the additional capacity. Figures obtained by the author indicate that the fleet structure changed primarily through a number of the smaller vessels exiting the fishing, most likely via the government capacity-points buy-out program (Olsen, J. B. pers. comm.). By 1995, 90 points worth of capacity had left the fishery.

Table 5.1, below, demonstrates that ownership of points by smaller vessels reduced over time.

Table 5.1: Capacity-Point Distribution by Vessel Size from 1993-95

Year	<75 GRT	79'ers	>80 GRT	Total
1993	492	78	7	577
1994	480	78	7	565
1995	412	78	27	517

(Source: GHRA database)

Similarly, Tables 5.2 and 5.3 show an exodus of smaller vessels from the fishery. Most significantly, the number of vessels under 25 gross registered tons (GRT) dropped from 82 in 1993 to just 64 in 1995. According to the rules of the program, vessels above 80 GRT should

not be participating in the inshore fishery. Their presence in these tables indicates either an error in the database or a special case allowed by the GHRA (Rasmussen, R. O. pers. comm.).

Table 5.2: Number of Vessels with Capacity Points by Size in 1993

GRT	<5 P	6-10 P	11-15 P	>15 P	Total
<25	76	6			82
25.5-50	12	6	1		19
51-75	4	7	3	4	18
75.9-100		2	1	3	6
Total	92	21	5	7	125

(Source: GHRA database)

Table 5.3: Number of Vessels with Capacity Points by Size in 1995

GRT	<5 P	6-10 P	11-15 P	>15 P	Total
<25	60	4			64
25.5-50	11	6	1		18
51-75	3	6	3	3	15
75.9-100		2	1	3	6
Total	74	18	5	7	104

(Source: GHRA database)

The GHRA adopted an ITQ system for the inshore fishery in 1996, largely because the capacity-points system had not sufficiently changed the structure of the fishery and because of the system's built-in potential for "capital-stuffing" (Rosing, E. pers. comm.). Capital-stuffing occurs because old vessels leaving the fishery rarely perform to their predicted capacity and authorities cannot always predict the effects of rapidly developed new designs (Poole 1996: 361). An ITQ system operates in a similar fashion to the capacity-points system only it is based on outputs rather than inputs. In other words, it establishes a market for the right to catch fixed percentages of the annual TAC for a given fishery.

In order to own an ITQ for the inshore fishery, an individual or company must meet criteria that establish residency in Greenland and a history of participation in Greenlandic fisheries. Also, no single individual or company may own more than 10% of the total ITQs for the inshore fishery (Greenland *Lansting* 1996: 5). These two aspects of the Greenlandic law appear to safeguard the fishery against foreign or monopolistic ownership. However, evidence from ITQ programs in the United States, Canada, and Iceland suggest that these are not the only worries for rural Greenlanders who wish to continue in the fishery.

Fundamentally, the ITQ system is designed to rationalize a fishery by allowing more-efficient, and thereby more-profitable, fishers to purchase additional quota from less-efficient participants. At the same time, the sale offers an incentive, in the form of a cash payment for the quota, for less efficient fishers to leave the fishery. In accomplishing this objective, the market forces for ITQs obey most expected laws of economics. Accumulated capital and economies of scale favor larger, urban-based fishers and companies. In addition, if the TAC is reduced, all shareholders suffer but not equally. Holders of small quotas suffer from smaller profit margins, but larger shareholders can better weather reductions.

As demonstrated in Iceland, home to one of the longest running ITQ systems, over time, fishing rights will be increasingly concentrated in the hands of the biggest actors involved (Pálsson, G. and A. Helgason 1995). Pálsson and Helgason (Ibid. : 142) suggest that this process is "to some extent intrinsic to the ITQ system." Despite attempts to preserve equitable distribution of fishing rights, by both community and vessel size, in the small dragger fishery of Canada's Scotia-Fundy

region, quota accumulated in the hands of a few companies (McCay et al. 1995). Therefore, the system that currently invests residents of the smaller towns and settlements with the right to fish will transfer that right to wealthier individuals and companies, likely located in larger towns. In other words, if it functions according to its design, the ITQ system will most likely erode their resource base within a few years.

Conversations with two Greenlandic officials confirmed that they foresee a similar result (Rosing, E. pers. comm.; Olsen, J. B. pers. comm.). With annual catches of the newer and larger vessels averaging approximately 1,000 tons, and the TAC for the inshore fleet averaging 23,000 tons, they informally estimate that 30 vessels will control the TAC for the inshore fishery in a few years. The buyout program that existed under the capacity-points system still operates but with additional funds and an enlarged mission. The public support arm of the Directorate of Fisheries, Hunting, and Agriculture has a further 10 million Danish kroner, or about $1.72 million, in its annual budget for the next three years to offer as incentive for the exit of inefficient vessels or as financing to allow owners of smaller vessels to combine efforts aboard a single but newer and larger vessel (Olsen, J.B. pers. comm.). Obviously, some owners of smaller vessels may use this program to remain in the fishery, albeit as a partner rather than sole operator. However, most will not be able to continue to fish.

The resource base of the inshore fishery is substantial, roughly one third of the total shrimp catch by domestic vessels in Greenlandic waters, as shown in Table 5.4. However, the monetary value of the inshore fishery is difficult to determine from available information. Statistics Greenland valued the total shrimp harvest in 1992 at 322 million

Danish (nominal) kroner, or approximately $50 million. This was a high volume year, but prices were also low (Royal Greenland News 1993).

Table 5.4
Nominal Yearly Catch by
Domestic-Fleet Components (in tons)

Year	Inshore	Offshore	Total Catch	Inshore Catch as % of Total
1990	20,426	49554	63341	32%
1991	23,943	52834	69,511	34%
1992	25,789	58664	79,226	32%
1993	26,651	52280	69,814	38%
1994	27,359	53693	71,811	38%
1995	25,362	51900	68,329	37%

(adapted from Hvingel, C. et. al. 1996: 7)

The value of the inshore fishery is a somewhat smaller percentage of the total harvest value than the above figures might suggest, however. As indicated earlier, the instability in and heterogeneity of quality, freshness, and size reduce the value of the inshore catch. Furthermore, Royal Greenland, to whom the inshore fleet must deliver its catch, pays inshore fishers up to 25% less than the market price elsewhere in Northern Europe (Friis, P. pers. comm.). A smaller fleet of larger vessels should raise standards of quality and freshness and provide them on a more regular basis, raising the over all economic value of the fishery.

5.2.4 CAPITAL IN THE INSHORE SHRIMP FISHERY

Most of the capital for the inshore fleet originates from loans issued by the Directorate of Hunting, Fishing, and Agriculture. Unfortunately, though loans have been available on generous terms (*Ibid.*), they have not enabled fishers to become profitable or start new development enterprises. In fact, the easy availability of loans, particularly in the 1980s, appears to have hampered the efforts of the

GHRA to move fishers out of the fishery under the capacity points system in the 1990s. In 1992, 90% of vessels in the inshore fishery were in arrears on loan payments. Moreover, 75 vessels were in not in a sufficient state of repair to justify further investment, though most owners of these vessels held loans on which they were unable to make payments. Fishers were reluctant to leave the fishery because they had few other cash-earning options. Due to the political sensitivity of repossessing a vessel by local authorities in the close-knit settlements and towns, authorities seldom exercised that option (Poole 1996). In effect, the loans amount to a subsidy of unprofitable participants, and facilitate little, if any, development. They assist continued participation in the fishery, but represented no avenue for fundamental change.

Importantly, though loans from the Directorate of Hunting, Fishing, and Agriculture are only offered for commercial purposes (Olsen, J.B. pers. comm.), the vessels they secure are used for more purposes than just commercial fishing (Friis, P. pers. comm.). In many of the settlements, boats are a primary means of private transportation. Likewise, the Greenlanders use some of the same vessels, particularly the smaller ones, in hunting and fishing for both subsistence and the informal markets. The efforts of the GHRA to move smaller vessels out of the fishery by forgiving loans and offering incentives will close this source of capital and end this indirect subsidy of informal economic activities.

Because returns are divided among so many individual and overwhelmingly unprofitable fishers, little development and enterprise is possible from the proceeds. Once the ITQ system has reduced the number of fishers, the remaining few may gain sufficient

profits to promote certain development interests, but these may likely reflect personal rather than community goals. The GHRA might levy a tax to capture some of the economic rent from the remaining fisherman and divert the revenue towards more public goals. However, an effort to tax the offshore fishery has resulted in little revenue due to market forces and its politically unpalatable nature (Poole 1995).

Royal Greenland owns all of the sixteen major onshore processing plants in Greenland (Arnason, R. and Friis, P. 1994: 199). Because it is a publicly-owned company, one might consider the processing facilities as part of the development structure of the inshore fishery that is available to rural residents. As noted in Chapter 3, the catches from the inshore fleet create the equivalent of 300-350 full-time processing positions. Though the GHRA has directed Royal Greenland to pursue social rather than purely economic goals at times (Poole 1995), market pressures and profit-seeking drive most of its actions. Company officials in Nuuk and Copenhagen, directing the workings of this large company, typify the "top-down" development decried in the community-development literature, and rural Greenlanders have little say in the company's decisions.

5.3 EMPLOYMENT

5.3.1 THE CDQ PROGRAM

Table 5.5 summarizes both the annual and seasonal employment figures for the CDQ program. The employment provided by CDQ corporations and their subsidiaries does not amount to a large percentage of total employment for the region. This is particularly true on an annual basis, as shown in Table 5.5. However, CDQ corporations have produced substantial gains in the number of

participants employed in "basic" industry, consisting of private sector industries such as agriculture, forestry, fishing, mining, construction, and manufacturing of both durable and nondurable goods.

Table 5.5: CDQ Employment Compared to 1989

	CDQ Employment	CDQ Employment as % of 1989 Employment	CDQ Employment as % of 1989 "Basic" Employment
1993 average	173	3%	25%
1994 average	387	6%	57%
1993 highest quarter	213	3%	31%
1994 highest quarter	761	12%	112%

(adapted from State of Alaska 1995: 33)

Basic industries "usually produce goods or services for sale outside a region." (State of Alaska 1995: 33)

Table 5.6, below, shows the number of shareholders employed on catcher-processor and processor vessels. Some of this employment is directly related to catching pollock CDQs, but residents of the region have also become more active in the overall industry since the inception of the program (Townsend 1996: 25).

Table 5.6: CDQ Shareholders Employed on Pollock-Processor Vessels in 1994

Corporation	# Employed
APICDA	05
Bristol Bay	88
Central Bering Sea	26
Coastal Villages	40
Norton Sound	85
Yukon Delta	39
Total	283

(adapted from Townsend 1996: 55)

APICDA and Central Bering Sea place less emphasis on this activity, and fewer of their shareholders seek and hold jobs on these vessels. This is most likely the result of better economic conditions in the Aleutian/Pribilof Islands region and longer contact with the industry, which is mainly based out of Dutch Harbor/Unalaska and Akutan (*Ibid.*). Known as a"slime line," processing work is notoriously unattractive and often worked by immigrants or foreign workers.

All six corporations have used employment to reduce alcohol and drug abuse among shareholders (*Ibid.*). Employment on catcher-processors requires pre-employment drug-testing and, once aboard, maintaining a drug-free workplace. CDQ corporations use training programs to the same effect.

5.3.2 THE INSHORE SHRIMP FISHERY

Employment figures for the Greenland's inshore shrimp fishery are more difficult to obtain. However, some general observations can be made. Based on field work done in 1991 and 1992, Poole (1995: 171), noted that the inshore fleet consisted of 140 to 150 vessels and directly employed 750 fishers during the fishing season. Tables 5.2 and 5.3 indicate that 125 vessels held inshore capacity points in 1993 and 104 in 1995, suggesting dramatic reductions in employment over that time period.

Crew member totals are not available for all of the 95 vessels, listed in Appendix 1, that hold inshore ITQs in 1997. Taking an average of the number of crew per vessel, in three size classes (<25 GRT, 25-74.9 GRT, and ≥ 75 GRT) that do report the number of crew, and applying it to all members of that class, and then an average of all three classes for the five remaining vessels of unknown size, we arrive at an

approximate figure of 455 fishers employed seasonally in 1997. As mentioned earlier, Greenlandic officials informally estimate that 30 relatively new vessels above 75 GRT will hold all the ITQ for the fishery in a few years. Using a crew number of seven, obtained by averaging the number of crew for vessels in that size category, this suggests that the inshore fishery will create direct seasonal employment for roughly 210 people.

Table 5.7: Inshore Fishers as % of Labor Force

Year	Inshore Fishers	% of Estimated 1994 Total Labor Force	% of Estimated 1994 Total Employment	% of 1994 Non-Government Workers
1992	750	2.7%	3.3%	4.5%
1997	455	1.6%	1.96%	2.8%
???	210	.74%	.91%	1.2%

(sources: Statistics Greenland 1995: 75;
GHRA database, displayed in Appendix 1)

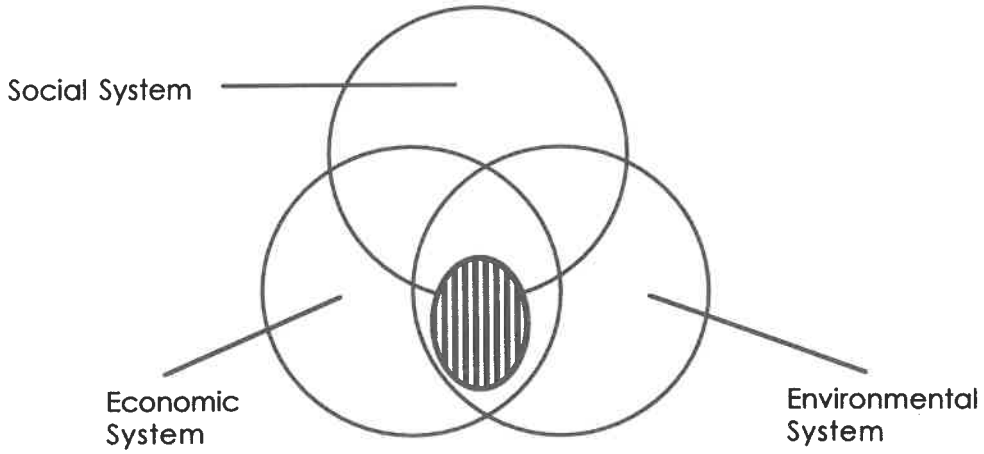
Table 5.7 expresses employment in the inshore fishery over time as a percentage of the estimated total force, estimated total number of employed persons, and estimated non-government workers (including the GHRA, *kommunes*, Danish authorities, and public corporations). As seens in Table 5.7, the capacity-points system has reduced employment, and the ITQ system should continue that trend, perhaps stabilizing around 210 seasonal positions.

5.4 SOCIAL ORGANIZATION

Revisiting Young's adaptation of the sustainable development model, Figure 5.1 shows the CDQ program situated more strongly in the nonsocial, environmental and economic area, with some exceptions. Pollock is the primary catch and economic mainspring of the program, and the pollock is caught by partner companies for export markets. Local shareholders who work and train on partner company vessels must obey the patterns and values of the commercial system.

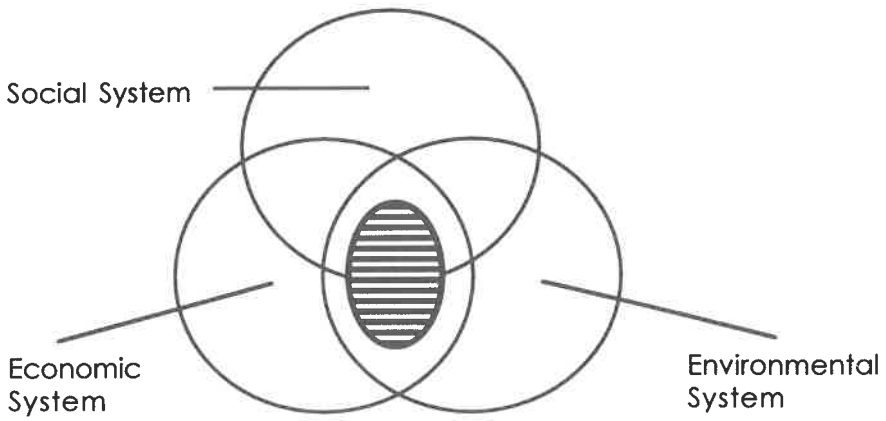
However, outside this core activity, opportunities for more culturally appropriate development can occur. Five of the six CDQ groups themselves are incorporated as nonprofit companies, and all of them, though obviously affected by market forces, have some leeway for crafting flexible work schedules, that allow for time for subsistence activities, and organizational structures that fit more comfortably within preferred patterns.

Figure 5.1: The CDQ Program Model



The number of people that each corporation actually employs is fairly minimal though. On the positive side, several of the smaller enterprises they have generated, such as the local fleets to catch their halibut quota, are able to utilize more traditional modes of production.

Figure 5.2: The Inshore Shrimp Fishery Model



The inshore fishery, modeled in Figure 5.2, falls within the same general area but includes more appropriate social organization. Like Alaskan pollock, shrimp caught in Greenlandic waters are also destined for export, and the dictates of the market pervade much of the fishery. However, because the fishery is limited to smaller vessels and inshore waters, crew sizes are generally quite small. Often the boat owner and captain are one and the same person, and the skipper employs one or two relatives or neighbors as his crew. In such a small crew, the relationship need not be strictly hierarchical and can be based on more traditional, egalitarian patterns.

Applying Ross and Usher's characteristics of formal economic activity, shown in Table 4.1, we see that both the CDQ program and the GISF contain many elements of the formal economy. Without going through each point separately, all more or less apply to the CDQ program, though, as noted above, the local fisheries based on halibut CDQs and other species offer a chance for less hierarchical organization and more traditional methods of work production. As for the inshore fishery, while individual fishers' current fishing and business practices may not fit most of the characteristics in Table 5.8, the capacity points system and the new ITQ system dramatically favor formal activity.

In a study of several Yupik villages in Alaska's Bristol Bay, Harris (1987: 161-180) discusses how economic and social relationships between generations are affected by an intrusive economic system. He notes that, because of education opportunities and fewer ties to the traditional economy, the younger generations normally adapt more quickly to the wage economy and, as a result, hold more economic and social power. The power of the younger generation severs ties

with the older generation, relegating elders to a social and economic backwater. In a few villages where most of the adult males had successfully retained their limited-entry permits, the older generation effectively maintained their authority. Because fishing represented a better opportunity than wage jobs, the younger generation had to appease the old in order to continue in the fishery and, perhaps, one day inherit a permit. This appeasement secured the persistence of traditional social order and allowed village elders to dictate the pace of change. This controlled path to change resulted in a lower incidence of outmigration by the younger generation, alcohol and drug abuse by all community members, and lower crime rates (*Ibid.* : 176).

The formal economic nature of the CDQ suggests that the younger generation may find a larger role in the six CDQ groups. However, because this attractive source of income is tied to the village, traditional community social structures, and, through them, older generations, may maintain a certain amount of control over the CDQ corporations. In the case of the inshore shrimp fishery, ITQs have some potential to function like the limited-entry permits in the villages in Harris' study. The problem lies in the fact that market forces, and the buy-out incentive programs, will likely take this source of economic strength out of the settlements altogether. Unfortunately, sufficient data do not exist to allow application of Harris' approach to the two study areas. This represents a potentially rewarding area for future study of the two programs.

In the Canadian and American fisheries studied by McCay et al. (1995), they note changed social relations between crew and owners under the ITQ systems. In both cases, most vessel owners reduced the

crews' share after the start of the ITQ system. The few that did not mainly hired kin, or close friends and neighbors. Larger firms strongly exhibited this behavior, and many justified it by virtue of having to pay for the financing of new ITQs. McCay et al. suggest that, "in effect, the crew is paying for the purchase or leasing of ITQ." (Ibid. : 101) With the reduced need for labor in the fishery, crew had little bargaining power to maintain their former level of wages. Leasing of ITQs occurs not only in the Scotia-Fundy, and has become an important feature of the Icelandic ITQ system system (Pálsson and Helgason 1995: 135). The Greenland ITQ system forbids profit-driven speculation and leasing of ITQs. Therefore, one should not expect the "tenancy" system that emerged in Iceland, in which small boat owners had to resort to fishing leased quota on poor terms to continue in the fishery, to appear in the inshore shrimp fishery. However, because of the concentration of ITQs, one might expect a similar devaluation of wage levels and crew bargaining power as exhibited in the Canadian and American fisheries.

In both cases, fishing is largely a seasonal activity. The difference in employment levels between the highest quarter and the yearly averages in Table 5.5 illustrate the seasonal nature of employment for CDQ shareholders. In Alaska, pollock is caught during two separate seasons, and the CDQs for pollock can be caught at any time of the year. Therefore, the potential exists for CDQ shareholders working on partner vessels and/or small boat fleets for halibut and other species to spend several months per year fishing. Although the flexibility exists for the corporations to structure operations as they wish, the seasons, which are set by the state and the NPFMC, dictate much of the timing. In most of Greenland, ice conditions prevent year-round trawling, although the season has no specific limits. The increasing

concentration of ITQs over the coming years should contribute to a smaller number of people working for a longer period of the available season.

5.5 SKILLS

Lyck and Taagholt (1987) suggest that education is one of the keys to the continuing development of Greenland . The issue at stake for all residents of remote regions is whether or not they will be able to fully participate in development based on resources in their region (Young 1995). Langdon's discussion (1987) of near-shore, commercial salmon and herring fisheries in Western Alaska notes that the activity builds on many traditional weather-related, boat-handling, and harvesting skills. Some of these same skills may transfer to the larger vessels used to harvest pollock CDQs and the larger shrimp trawlers favored by the ITQ system. However, many new skills are needed.

5.5.1 THE CDQ PROGRAM

In Alaska, and the rest of the United States, students seeking higher education and vocational educational after secondary school must pay for them. As a result, the skills learned in such courses remain in short supply in the cash-poor, remote regions of Alaska. A major focus of all six CDQ groups has been education and training. Most have scholarship funds for residents of their areas and all provide some forms of technical training. Tables 5.9 and 5.10 give a summary of the courses and opportunities provided by the CDQ corporations for residents of the entire CDQ region. For an area of approximately 20,000 residents, the opportunities provided by the CDQ program represent a substantial contribution to skill acquisition.

Table 5.8: Higher- and Vocational- Education Opportunities provided by the CDQ Program

Higher Education	1992-93	1994	Totals
Undergraduate College and University	64	112	176
Vocational Education			
Aluminum Boat Fabrication	0	18	18
Auto and Diesel Technology	0	4	4
Biomedical Electronic Technician	0	1	1
Business Management	0	8	8
Carpenter	0	1	1
Paralegal	0	2	2
Power Plant Operation	0	1	1
Seafood Industry Management	0	2	2
Travel Specialist	0	1	1
Totals	0	38	38

(adapted from State of Alaska 1995: 40)

Table 5.9: Technical-Training Opportunities Provided by the CDQ Program

Technical Training	1992-93	1994	Totals
Processor Workers	161	44	205
Vessel Safety	49	92	141
Fishing Training	47	90	137
Computer Applications	30	151	181
Electronic Navigation	26	65	91
Equipment Operation	23	28	51
Mechanics/Welding	14	51	65
Grants Management	12	12	24
Clerical	6	15	21
Emergency Medical Service	5	0	5
HAZWOP	1	0	1
Baker	0	1	1
Marine Firefighting	0	1	1
Industrial Refrigeration	0	1	1
HVAC	0	2	2
Totals	375	552	927

(adapted from State of Alaska 1995: 40)

5.5.2 THE INSHORE SHRIMP FISHERY

In Greenland, the Home Rule authority provides for all education and training opportunities. A student need only qualify and express an interest.

Table 5.10
Graduates from Paamuit Navigation School

	Basic Navigation A	Basic Navigation B	Ship Assistant	Dragnet Making
1993/4	1	0	3	3
1994/5	0	1	0	12
1995/6	0	0	3	22
Totals	1	1	6	37

Table 5.11
Graduates from Maniitsoq Fishing-Industry School

	Fishing Assistant	Fishing Industry Assistant	Fishing Industry Technician
1993/4	34	30	4
1994/5	0	16	4
1995/6	0	2	4
Totals	34	48	12

Tables 5.11 through 5.15 demonstrate the number of graduates from fisheries-related courses. These figures show all graduates, not just those from *kommunes* that have participants in the inshore fishery, and come from Statistics Greenland records (Danielsen, M. pers. comm.). The list is selective and does not include all vocational, technical, and higher educational graduates, merely those most directly related to fishing activities. The courses vary in length from five months to two and four years for the Danish courses listed in Table 5.15.

Table 5.12
Graduates from Illulissat Ship-Masters School

	Fishing Boat Master	Coasting Master	Home-Trade Master
1993/4	18	3	0
1994/5	9	2	0
1995/6	13	1	6
Totals	40	6	6

Table 5.13
Graduates from Nuuk Ship-Masters School

	Fishing Boat Master	Ship Engineer
1993/4	13	6
1994/5	7	1
1995/6	10	4
Totals	30	11

Table 5.14
Graduates from Fisheries Education in Denmark

	Ship Technician	Ship Master Engineer	Fishing Technology	Ship Master
1993/4	0	0	0	0
1994/5	0	2	0	2
1995/6	1	1	1	2
Totals	1	3	1	4

5.6 POLITICAL VIABILITY

5.6.1 THE CDQ PROGRAM

Thus far, the CDQ program has not attracted serious opposition. The low profile of the program has left it with few political foes. Fisheries management regimes do not make for exciting television, and the rest of the country is largely ignorant of the program's existence. In Alaska, resource debates figure more prominently in daily life and often involve fierce contests and entrenched philosophical camps. However, even there the program is not widely known outside the affected area. During the debate over the reauthorization of the

Magnusson Act in the summer of 1996, several large-scale fishing companies that own and operate catcher-processors in the Bering Sea pollock fishery spoke against the program in congressional hearings (Anchorage Daily News 1996: B-3). However, their efforts did not endanger the act's passage or the continuation of the CDQ program. The program has the support of the three Alaskan members of congress, all of whom hold senior leadership positions in the dominant party's organization, particularly with respect to natural resource issues.

Overall, the CDQ program has generated little conflict. In its calculation of the TAC for Bering Sea pollock, the NPFMC included a 15% margin of error, or "conservation" reserve. When the program began, the pollock CDQs, 7.5% of the TAC, were withdrawn from that reserve (Hamm, D. pers. comm.). Likewise, the NPFMC adopted CDQs for halibut and sablefish at the same time it instituted an ITQ system in what had formerly been open, derby-style fisheries. Therefore, no one gave up their right to fish in order for the CDQ corporations to enter the fishery; the program has not been a zero-sum game. Moreover, five of the six CDQ groups lease their quota to catcher-processors at highly competitive rates. The sixth formed a joint venture with a vessel owner already in the fishery. In effect, the partner companies are able to catch more fish. They simply have to pay to catch those extra fish, and so far they have shown a willingness to pay that price. Most of the market value of fish is added by processing, and, as a result, the partner companies still make substantial returns from the CDQs.

The potential exists for the CDQ program to become linked to the ongoing debate over rural Alaskans' preferential right to fish and

game for subsistence harvests. In essence, both the CDQ program and federal subsistence law afford rural and Native Alaskans superior access to renewable resources. Urban-based, and mostly sport, hunters and fishers denounce the preferential treatment rural Alaskans receive. Race is involved in the issue because of the federal government's role in overseeing Native affairs. The subsistence priority was originally intended just for Natives, but Alaska's congressional delegation successfully amended the priority to rural, in an attempt to avoid racial conflict.

So far this linkage has not happened, perhaps because most Alaskans are not directly competing with CDQ groups for pollock, halibut, or sablefish. Also, the Alaskan attitude about vessels from the "lower 48" reaping benefits from Alaskan waters has probably contributed to the lack of conflict. Most Alaskans look unkindly upon factory trawlers. Typically owned by large Seattle-based concerns or food industry barons like the billionaire Frank Tyson and known for low wages and harsh working conditions, they garner little sympathy. As the program expands, this remains a serious potential threat to its longevity, though. The subsistence debate has raged off and on for twenty years and is a constant source of contention. Both sides hold what have proved to be intractable positions. Only the threat of federal management of many state fisheries has periodically brought the sides together to look for solutions. Indeed, the subjects of Native sovereignty and Native rights divide the state like few others.

5.6.2 THE INSHORE SHRIMP FISHERY

Greenland's inshore shrimp fishery presents a different set of challenges. The racial divide seen in Alaska resource debates does not appear in Greenlandic society. Though observers of modern

Greenland note the differences and prejudices between the regional and cultural affiliations (Nuttall 1992), the two places are not alike in this regard. Instead, the ITQ system may face public opposition like that which has developed in Iceland. Fishing activities form the basis of private industry in both countries and account for an overwhelming share of their export-oriented economies (Poole 1995; Arnason 1995).

In Iceland, the ITQ programs, instituted in 1982 and amended in 1990, have engendered serious opposition. Neither the "quota-kings" and "lords of the sea" that now control the ITQ shares nor the ITQ systems themselves are viewed with favor. Icelanders' symbolic notions of personal freedom, social equity, and national sovereignty appear to conflict with the idea of privatized natural resource rights (Pálsson and Helgason 1995). In 1994 and 1995, fishermen held national strikes against the system, and national surveys demonstrate strong disapproval of the inequitable distribution of public resources. Some observers note that the efficacy of the system may ultimately be jeopardized by moral disapproval and lack of public acceptance (Ibid.).

Opposition to ITQs has not yet emerged on a similar scale in Greenland. It may not. However, strong cultural ties to land and resources on a community and personal level do not appear to mesh well with market-based privatization schemes like ITQs. With no apparent alternatives, rural Greenlanders may not appreciate being denied a significant stake in the country's primary industry. Concentration of fishing rights in more urban towns could also exacerbate rural-urban tensions. In any case, additional unemployment in the already depressed rural settlements and small towns will create hardship, a common ingredient of social unrest.

Chapter 6: Conclusion

Barbier's (1987) caution about the difficulties of modeling sustainable development is particularly relevant. The mixture of quantitative and qualitative values in the two programs analyzed in Chapter Five make precise comparison difficult. Moreover, there is no secret formula because the individual circumstances of each program and the desires of the participants are not the same. However, based on the criteria used in this thesis, we can distinguish clear differences between the design and effects of the Western Alaska CDQ program and the Greenland inshore shrimp fishery.

The CDQ program is a single coordinated effort between state and federal officials to actively involve indigenous residents of Western Alaskan coastal villages in several phases of commercial fishing. It targets an area with a history of systematic, exclusion of Native fishers from commercial fisheries. Experiences with the limited-entry permit system, and the resulting migration of permits to urban Alaska, in particular, tempered its design. As a result, it bestows community-based rights to resources, instead of individual-based ownership. Further, the designers and administrators appear to have generally heeded the suggestions of academics and indigenous people in constructing the program. The State of Alaska anticipates various routes to community development for each CDQ region, and allows each corporation to exercise a fair amount of control over its own destiny. Importantly, the resource base, and the capital that comes from its utilization, appear to enable a significant amount of employment, investment in infrastructure, and fostering of new skills for participants and residents of the region. The free reign given by the state permits tailoring of work production and organization to locally preferred patterns, but the formal economic nature of much of commercial fishing and processing limit this capacity somewhat. So

far, the CDQ program has avoided attracted any damaging political opposition, but, as with all resource regimes, it may yet arise. The political difficulties of allowing investment outside of fisheries-related ventures offers a case in point.

The Greenland inshore shrimp fishery is not a planned development program, but it functions, for rural Greenlanders, as a primary resource base for employment and development. The Greenland Home Rule Authority has faced a dilemma over the restructuring of the inshore shrimp fishery fleet. The large number of old and under-performing vessels reduce the overall value of the resource. In addition, current overcapacity in the fishery has raised concerns about the long-term health of stocks. In response, the Home Rule Authority adopted two successive individual- and market- based regimes. The capacity-points system, adopted in 1991, began the concentration of the right-to-fish among fewer and fewer people. The ITQ system, adopted in 1996, should complete that process, reducing the number of vessels from 140-50 to approximately 30.

While this should increase efficiency and raise the value of the resource, the restructuring of the fleet has serious consequences for life in the small towns and settlements of Greenland. It limits access to a primary resource base for an area with few alternatives. The loan program, open to commercial fishers, did not enable returns sufficient to start other development projects. While the loans hamper current efforts to restructure the fleet, they did, in effect, subsidize local informal economic activity such as subsistence, and small-scale commercial, hunting and fishing. The fishery does allow for preferred models of work production and organization, but the capacity-points system and the ITQ system heavily favor more formal economic

methods. Questions of social equity have troubled ITQ systems elsewhere, though they have not yet affected its implementation in Greenland.

The two market-based resource regimes in Greenland have shifted, and will continue to shift, control over resources out of the rural areas. Market-based resource regimes appear to have similar effects as markets in general, they do not favor remote regions. This is because of the inherent qualities of remote regions, such as the lack of capital and formal economic skills. When rural fishers make the economically rational act, they lose the future right to fish and control over their resource base. Hence, it appears that we should not expect purely market-based regimes to foster community development.

The community-based rights of the CDQ system do not permit the transfer of resource rights to other areas and allow communities to maintain control over their resource base. Moreover, the CDQ system operates within a larger market-based resource regime. The NPFMC manages both halibut and sablefish with ITQs, and the quota structure of the pollock CDQs appears to easily mesh with an ITQ system, should it be adopted for that fishery. While the CDQ program is still in its infancy, it demonstrates that community development of remote regions can occur under the right circumstances and offers some potential for use as a model elsewhere.

REFERENCES

Published Books, Articles, Etc.:

Anchorage Daily News. 1996. "Magnusson Act debate heats up." *Anchorage Daily News*. July 13, 1996. B-3.

Armstrong, T., G. Rogers, and G. Rowley. 1979. The circumpolar north. London: Methuen and Company, Limited.

Arnason, R. 1995. The Icleandic fisheries: evolution and management of a fishing industry. Oxford: Fishing News Books.

Arnason, R. and P. Friis. 1994. "The Greenland fisheries: opportunities and challenges." in Friis, P. (editor) The internationlization process and the Arctic, proceedings from the Nordic Arctic Research Forum symposium 1994. Roskilde, Denmark: Roskilde University. p. 183-213.

Barbier, E. 1987. "The concept of sustainable economic development." *Environmental Conservation* 14 (2): 101-110.

Bosworth, R. 1995. "Biology, politics, and culture in the management of subsistence hunting and fishing: an Alaskan case history." in Peterson, D. and D. Johnson (editors). Human ecology and climate change, people and resources in the far north. London: Taylor and Francis. p. 245-59.

Callaway, D. 1995. "Resource use in rural Alaskan communities." in Peterson, D. and D. Johnson (editors). Human ecology and climate change, people and resources in the far north. London: Taylor and Francis. p.155-168.

Cole, Terrence. 1991. Crooked past. Fairbanks, Alaska: University of Alaska Press.

Colt, S. 1991. "Financial performance of Native regional corporations." *Alaska Review of Social and Economic Conditions* 28 (2).

Copes, P. 1986. "A critical review of the individual quota as a device in fisheries management." *Land Economics* 62 (3): 278-291.

Flanders, N. 1992. "What do we mean by 'Sustainable Development' in village Alaska?" in Lyck, L. (editor) Nordic Arctic research on

contemporary Arctic problems. Aalborg: Aalborg University Press. p. 253-62.

Ginter, J. J. C. 1995. "The Alaska community development quota fisheries management program." *Ocean & Coastal Management* 28 (1-3): 147-163.

Goldsmith, S. 1994. "Who benefits from the Permanent Fund?" *Alaska Review of Social and Economic Conditions* 26 (1).

Hamilton, L., R. O. Rasmussen, N. E. Flanders, and C. L. Seyfrit. 1996. "Outmigration and gender balance in Greenland." *Arctic Anthropology* 33 (1): 88-97.

Harris, B. 1987. "The survival of respect: economic power and the persistence of community." in Lane, T. (editor). Developing America's northern frontier. London: University Press of America. p. 161-80.

Hibler, W. D. 1989. "Arctic ice-ocean dynamics." in Herman, Y. (editor). The Arctic seas: climatology, oceanography, geology, and biology. New York: Van Nostrand Reinhold Company. p. 47-92.

Hoel, A. H. 1993. Arctic development, economic and environmental aspects. Tromso: Nordic Council.

Huskey, L. and T. Morehouse. 1992. "Development in remote regions: what do we know?" *Arctic* 25 (2): 128-137.

Kresge, D., S. Fison, and A. Gasborro. 1974. Bristol Bay, a socioeconomic study. Fairbanks, AK: Institute of Social, Economic, and Government Research, University of Alaska.

Langdon, S. 1987. "Commercial fisheries: implications for Western Alaska development." in Lane, T. (editor). Developing America's northern frontier. London: University Press of America. p. 3-26.

Lyck, L. and J. Taagholt. 1987. "Greenland - its economy and resources." *Arctic* 40 (1): 50-59.

Marantz, B. 1996. "Issues affecting the rights of indigenous peoples in international fora." *Essays on Human Rights and Democratic Development Paper No. 5*. Montreal: International Centre for Human Rights and Democratic Development.

McCay, B., C. Creed, A. Finlayson, R. Apostle, and K. Mikalsen. 1995. "Individual transferable quotas (ITQs) in Canadian and U.S. Fisheries." *Ocean & Coastal Management* 28 (1-3): 85-115.

McNabb, S. 1992. "Native claims in Alaska: a twenty-year review." *Etude/Inuit/Studies* 16 (1-2): 85-95.

National Research Council. 1996. The Bering Sea ecosystem. Washington, D. C.: National Academy Press.

Nuttall, M. 1992. Arctic homeland. London: Bellhaven Press.

Nuttall, M. 1994. "Greenland: emergence of an Inuit homeland" in Minority Rights Group, (editor). Polar peoples, self-determination and development. London: Minority Rights Publications. p. 1-28.

Pálsson, G. and A. Helgason. 1995. "Figuring fish and measuring men: the individual transferable quota system in the Icelandic cod fishery." *Ocean & Coastal Management* 28 (1-3): 117-146.

Poole, G. 1995. The development of Greenland's shrimp fishing and processing industry since 1979: a study in applied economics. Copenhagen: Institut for Nationaløkonomi Haandelshøjskolen I København.

Poole, G. 1996. "The management of Greenland's shrimp fishing industry in the 1990s, from a bureaucratic to a market-based system of regulation." in Lyck, L. and V. I. Boyko (editors). Management, technology, and human resources policy in the Arctic. Netherlands: Kluwer Academic Publishers. p. 355-66.

Pretes, M. 1993. "Financial Resources for sustainable development in the Arctic." in Kakonen, J. (editor) Politics and sustainable growth in the Arctic. Aldershot, United Kingdom: Dartmouth Publishing Company. p. 93-105.

Pretes, M. and M. Robinson 1989. "Beyond boom and bust: a strategy for sustainable development in the north." *Polar Record* 25 (153): 115-20.

Ross, D. and P. Usher. 1986. From the roots up, economic development as if community mattered. Croton-on-Hudson, New York: The Bootstrap Press.

Royal Greenland News. 1991. "Royal Greenland is now one of the world's largest fish industries." *Royal Greenland News* 2nd year (1): 1-2.

Royal Greenland News. 1993. "International crisis hits Greenland." *Royal Greenland News* 3rd year (1): 1-2.

Schønwandt, H. K., and P. Dawes. 1992. "An overview of Greenland' mineral exploration potential." *Grønlands Geologiske Undersøgelse Rapport* 159: 10-16.

Stenbaek, Marianne. 1987. "Forty years of cultural change among the Inuit in Alaska, Canada, and Greenland: some reflections." *Arctic* 40 (4): 300-309.

Statistics Greenland. 1995. Greenland 1995/6 statistical yearbook. Nuuk: Statistics Greenland.

Sugden. 1982. Arctic and Antarctic, a modern geographical synthesis. Oxford: Blackwell.

Tabbert, R. 1991. Dictionary of Alaskan English. Juneau, Alaska: The Denali Press.

Townsend, R. and J. Wilson. 1987. "An economic view of the tragedy of the commons." in McCay, B., and J. Acheson (editors). The question of the commons. Tucson: University of Arizona Press. p. 311-26.

World Commission on Environment and Development. Brundtland, G. H. (chair). 1987. Our common future. Oxford: Oxford University Press.

Young, E. 1995. Third world in the first, development and indigenous peoples. London: Routledge.

Young, O. 1982. Resource regimes, natural resources and social institutions. Berkeley: University of California Press.

Young,O. 1996. The Arctic Council: marking a new era in international relations. New York: Twentieth Century Fund.

Unpublished Material:

Berman, M. 1986. "Strategies for economic self-reliance in rural northern villages." paper presented at the 1986 Annual

Meeting of the Western Regional Science Association. February 27, 1986.

Flanders, N., F. Enequist, and O. Young. 1995. Alternatives to the West Greenland Atlantic salmon fishery. Hanover, New Hampshire: Dickey Center Institute of Arctic Studies.

Greenland *Lansting*. 1996. Act Number 18, of 31 October 1996, Concerning Fisheries.

Hvingel, C. H. Siegstad, and O. Folmer. 1996. "The Greenland fishery for northern shrimp *(Pandus borealis)* in Davis Strait in 1995 and January-October 1996." *NAFO SCR Document* 96/109. North Atlantic Fisheries Organization.

Knowler, D. 1989. Aspects of absentee and local ownership of industry in remote areas. Department of Economic Development, Government of Yukon.

Sinding, K. 1992. "At the cross roads: mining policy in Greenland." Unpublished manuscript.

State of Alaska. 1995. Revised draft report, economic impacts of the pollock community development quota program. Anchorage: State of Alaska.

Townsend, R. 1996. "An economic assessment of Alaskan community development quotas." Prepared for the National Marine Fisheries Service.

Personal Communications:

Blazer, Rex. September 15, 1996. Division of Governmental Coordination, Office of the Governor, State of Alaska.

Danielsen, Mogens. May 5, 1997. Statistics Greenland, Greenland Home Rule Authority.

Friis, Peter. April 17,1997. Associate Professor of Geography, Roskilde University, Roskilde, Denmark.

Hamm, David. November 26, 1996. National Marine Fisheries Service, Juneau, Alaska.

Olsen, Jørn Birk. June 4, 1997. Director, Public Investment Support Agency, Directorate of Hunting, Fishing, and Agriculture, Greenland Home Rule Authority.

Poole, Graham. December 4, 1997. Consultant, Micronomics, Los Angeles, California.

Rasmussen, Rasmus Ole. April 17, 1997. Professor of Geography, Roskilde University, Roskilde, Denmark.

Rosing, Emanuel. May 28, 1997. Fisheries Directorate, Greenland Home Rule Authority.

Appendix One

Vessels of the Greenland Inshore Shrimp Fishery 1997

Registration #	Name	Call Sign	Tonnage	Built	Size	Yearly # ofCrew '92	'93	'94	'95	'96	mean
GR 1 - 069	Imaq	XP2115	17.15	1962	S		3.00				3.00
GR 1 - 168	Killoq	OVTP	41.10	1988	S		4.00				4.00
GR 2 - 122	Bingo II	XP2298	19.98	1956	S		4.00				4.00
GR 2 - 142	Laila	OXAA	0		?						
GR 2 - 166	C.N. Olsen II	OWES	209.00	1988	79		5.00				5.00
GR 2 - 167	Maren Olsen	XP2487	19.81	1965	S						
GR 2 - 177	Abitdleraq	OU4708	19.80	1988	S		4.40				4.40
GR 2 - 189	Angajorlit	XP2187	15.23	1963	S						
GR 3 - 060	K.B. Olesen	XP2205	19.99	1960	S						
GR 3 - 068	Isungaq	OUTI	70.87	1976	S		5.00				5.00
GR 3 - 070	Kakilisak	OWVQ	113.90	1986	?		5.00				5.00
GR 3 - 073	Hans David	OWGZ	37.20	1987	S						
GR 3 - 075	Putooruttoq	OU4282	19.90	1988	S		4.00				4.00
GR 3 - 079	P. Nielsen	OWXI	40.20	1987	S		4.33				4.33
GR 5 - 109	Fortuna	XP2040	14.33	1962	S						
GR 5 - 123	K.S. Møller	XP2372	19.99	1964	S						
GR 5 - 214	Akato	XP4407	19.97	1982	S		4.00				4.00
GR 5 - 228	Qingaaq	OWMZ	209.00	1988	79						
GR 6 - 149	Angooraq	OWOU	39.60	1986	S		5.00			3.60	4.13

Vessels of the Greenland Inshore Shrimp Fishery 1997

Registration #	Name	Call Sign	Tonnage	Built	Size	Yearly # ofCrew '92	'93	'94	'95	'96	mean
GR 6 - 220	Lasarus	OZTJ	149.73	1979	?						
GR 6 - 288	Qarsaaq	OUUC	78.10	1985	?						
GR 6 - 308	Gaia II	OVUB	74.98	1974	S		5.00			4.80	4.97
GR 6 - 308	Gaia III	OVXD	191.50	1988	79						
GR 6 - 355	Tobias Noahsen	OZJO	79.71	1981	?		7.00				7.00
GR 6 - 368	Najagtaa	XP2376	19.97	1964	S		4.00			2.90	3.64
GR 6 - 406	Jarte	OVUI	40.60	1987	S		4.20			3.83	4.17
GR 6 - 410	Marie Egede	OYNH	19.85	1963	S	2.00	3.33	2.00	2.00	3.00	3.17
GR 6 - 420	Lady	OYOE	36.33	1959	S		4.00			4.00	4.00
GR 7 - 021	Dorte Ingeman	OVUC	69.74	1969	S		4.63			4.00	4.60
GR 7 - 119	Emerilt	5QNW	19.99	1961	S		3.83			4.00	3.83
GR 7 - 129	N. Birgithe	OXDH	23.97	1962	S		3.90				3.90
GR 7 - 184	Jessen	XP3232	19.99	1975	S		4.20				4.20
GR 7 - 190	Jakob Olsen	XP2192	15.23	1963	S		3.80				3.80
GR 7 - 198	Karo	OXPZ	68.88	1980	S		6.60				6.60
GR 7 - 216	Anáse	OUHK	158.70	1983	?		6.88				6.88
GR 7 - 221	Karl Frederik	XP2808	19.80	1968	S		3.88				3.88
GR 7 - 225	Jaqqu	OU3482	19.90	1986	S		4.64			4.00	4.64
GR 7 - 226	Bassé	OU3644	19.90	1986	S		4.75				4.75

Vessels of the Greenland Inshore Shrimp Fishery 1997

Registration #	Name	Call Sign	Tonnage	Built	Size	Yearly # ofCrew '92	'93	'94	'95	'96	mean
GR 7 - 228	Qillaq	OYKA	209.00	1988	79						
GR 7 - 230	Aalipaaraq	OU5421	14.90	1991	S		4.73				4.73
GR 7 - 239	Smaragd	OU3434	19.90	1986	S					4.00	4.00
GR 7 - 241	Somi	OWHD	67.03	1971	S						
GR 8 - 137	Qatanngutigiit	XPA4752	19.09	1959	S		4.00				4.00
GR 8 - 184	Angerdla N. T.	XP2497	19.49	1965	S		3.80				3.80
GR 8 - 196	Marie Olsen	XPNN	19.91	1967	S		3.00				3.00
GR 8 - 215	Larseraq	XP2872	17.48	1976	S		3.90				3.90
GR 8 - 259	Rosa Rune	OVOG	37.20	1987	S		4.29				4.29
GR 8 - 264	E.H. Lennert	OXMV	62.78	1959	S		5.17				5.17
GR 8 - 275	Asummiut	OUYZ	117.30	1986	?						
GR 8 - 280	Miilu	XP2661	19.62	1966	S		3.80				3.80
GR 8 - 307	Rosa Linda	OUQC	25.50	1985	S						
GR 8 - 309	Mattaaraq	OYYH	72.67	1981	S						
GR 9 - 103	Charlotte Olsen	5POC	18.13	1959	S		4.27				4.27
GR 9 - 112	Asimio	XP2374	19.92	1964	S		3.32				3.32
GR 9 - 132	Pele Lars	XP2190	19.99	1963	S		3.00				3.00
GR 9 - 135	J.A. Oline	OU3189	12.90	1986	S		3.29				3.29
GR 9 - 137	Arkalu Nuka	OYAB	37.60	1987	S		4.94				4.94

Vessels of the Greenland Inshore Shrimp Fishery 1997

Registration #	Name	Call Sign	Tonnage	Built	Size	Yearly # ofCrew '92	'93	'94	'95	'96	mean
GR 10 - 178	G. Frantz Olsen	OZLJ	33.56	1976	S						
GR 10 - 187	Kattanguaq	5QDI	15.94	1965	S		3.22				3.22
GR 11 - 042	David	XP2711	16.29	1967	S		4.00				4.00
GR 11 - 055	Ole Karl	OZCB	25.07	1961	S		4.00				4.00
GR 11 - 063	Kuluk	XP3290	19.99	1975	S		4.00				4.00
GR 11 - 070	Lars Ole	5QNV	19.99	1961	S		4.00				4.00
GR 11 - 071	Sussi	OZIQ	57.64	1964	S		4.92				4.92
GR 11 - 080	Peda	OZRS	29.98	1966	S		4.00				4.00
GR 11 - 081	Lars Karl	OWMO	85.10	1986	?		4.95				4.95
GR 11 - 082	Isak K.	OWUW	27.90	1986	S		4.00				4.00
GR 11 - 086	Soqqaq	OU5768	19.80	1990	S		4.00				4.00
GR 11 - 087	Najatuaq	UO4683	0		?						
GR 11 - 088	Aannguaq	OU6570	0		?						
GR 12 - 061	Karl Birgithe	XP2626	16.24	1966	S		4.00				4.00
GR 12 - 065	Anaanaq	OZCC	25.07	1961	S		4.00				4.00
GR 12 - 096	Marke J.	OU4967	34.47	1987	S						
GR 12 - 098	Katri	OVTJ	69.87	1968	S						
GR 12 - 099	Lea	OWGY	26.45	1962	S						
GR 12 - 125	Nicolaat	5QIV	19.91	1961	S						

Vessels of the Greenland Inshore Shrimp Fishery 1997

Registration #	Name	Call Sign	Tonnage	Built	Size	Yearly # ofCrew '92	'93	'94	'95	'96	mean
GR 12 - 128	Karl Jakob	OZIS	46.17	1977	S						
GR 12 - 133	Marianne	OUTE	66.19	1975	S		5.00				5.00
GR 12 - 177	Malamuk	XP5124	19.26	1981	S		5.00				5.00
GR 12 - 192	Aleqa	OWWH	118.70	1988	?						
GR 12 - 194	Erimaat	OZTZ	188.90	1988	79						
GR 12 - 196	Janeraq A.	OXKX	78.10	1989	?		7.00			6.00	6.86
GR 12 - 208	Papik	OUHE	119.40	1989	?		7.00				7.00
GR 12 - 210	Fenja Siegstad	OZCY	78.10	1990	?		7.00				7.00
GR 12 - 212	Imerissoq	OULB	209.00	1990	79		7.00				7.00
GR 12 - 215	Mathiesen	OVOP	119.40	1991	?		7.52				7.52
GR 12 - 220	Aalisartoq	OVUP	0		?		7.00				7.00
GR 12 - 222	Ammak	OXHJ	24.58	1962	S						
GR 14 - 049	Elisabeth L.	OVYI	46.30	1988	S		4.33				4.33
GR 14 - 066	Hjertinnguaq	OYGI	45.38	1976	S						
GR 14 - 068	Mary West	XP2521	19.95	1965	S		4.00				4.00
GR 14 - 074	Nilse	5QOP	19.96	1961	S		2.00				2.00
GR 14 - 081	Qavak	OVOJ	192.30	1988	79						
GR 14 - 089	Ernitsiaq	OU5938	18.80	1990	S		5.00				5.00
GR 14 - 096	Maligiaq	OUJA	24.58	1962	S	3.00		3.00	3.00		3.00

Appendix Two

Appendix Two: Greenland Kommunes

#	Kommune	Danish Name	ISF
1	Nanortalik		X
2	Qaqortoq	Julianehaab	X
3	Narsaq		X
5	Paamiut	Frederikshaab	X
6	Nuuk	Godthaab	X
7	Manitsoq	Sukkertoppen	X
8	Sismiut	Hosteinsborg	X
9	Kangaatsiaq		X
10	Aasiaaat	Egedesminde	X
11	Qasigiannguit	Christianshaab	X
12	Ilulissat	Jakobshavn	X
14	Qeqertarsuaq	Godhavn	X
15	Ummanaq		
16	Upernavik		
18	Tasiilaq		

This table displays all Greenlandic kommunes and their Danish names where applicable. Kommunes with vessels from the inshore shrimp fleet are identified with an "**X.**"